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Oklahoma State Univ., Stillwater

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MODIFIED N.R.C. VERSION OF THE U.S.G.S. SOLUTE TRANSPORT MODEL, VOLUME 2: INTERACTIVE PREPROCESSOR PROGRAM

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FINAL REPORT

U.S. Environmental Protection Agency

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Project Officer

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16. ABSTRACT

The methods described in this report can be used with the modified N.R.C. version of the U.S.G.S. Solute Transport Model to predict the concentration of chemical parameters in a contaminant plume. The two volume report contains program documentation and user's manual. The program documentation has been written for those who have a background in mathematics and/or computer systems while the user's manual was written in layman's terms for those who may not have a background in numerical methods or computer programming. The program should function properly on any computer that has a PL/I compiler available. The computer codes will be implemented on the Robert S. Kerr Environmental Research Laboratory (RSKERL), Ada, OK, computer and other EPA computer systems accessed by RSKERL.

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FOREWORD

The U.S. Environmental Protection Agency was established to coordinate administration of the major Federal programs designed to protect the quality of our environment.

An important part of the Agency's effort involves the search for information about environmental problems, management techniques and new technologies through which optimum use of the Nation's land and water resources can be assured and the threat pollution poses to the welfare of the American people can be minimized.

EPA's Office of Research and Development conducts this search through a nationwide network of research facilities.

As one of the facilities, the Robert S. Kerr Environmental Research Laboratory is the Agency's center of expertise for investigation of the soil and subsurface environment. Personnel at the laboratory are responsible for management of research programs to: (a) determine the fate, transport and transformation rates of pollutants in the soil, the unsaturated zone and the saturated zones of the suburface environment; (b) define the processes to be used in characterizing the soil and subsurface environment as a receptor of pollutants; (c) develop techniques for predicting the effect of pollutants on ground water, soil and indigenous organisms; and (d) define and demonstrate tha applicability and limitations of using natural processes, indigenous to the soil and subsurface environment, for the protection of this resource.

This report contributes to that knowledge which is essential in order for EPA to establish and enforce pollution control standards which are reasonable, cost effective and provide adequate environmental protection for the American public.

Clinton W. Hall

Clinton W. Hall
Director
Robert S. Kerr Environmental
Research Laboratory

PREFACE

An interactive program (preprocessor) has been developed in this study to aid users in creating and editing input data sets for a modified version of the N.R.C. version of the U.S.G.S. Solute Transport Model which is described in Volume 1 of this report (Kent, et al, 1986).

A detailed description of the preprocessor, as well as source code listings, is included in this report. A sample listing of the interactive creation of an input data set for the modified N.R.C. version of the U.S.G.S. Solute Transport Model is also included. Data from the Babylon Landfill Site on Long Island was used in the examples shown in the report. The input data sets created, along with selected output from the modified model, are listed in Appendix VI. Potential users should be able apply the preprocessor with a minimum degree of effort to their individual needs by following the examples provided.

The final report represents the completion of the contract with the Environmental Protection Agency entitled, "Mathematical Models for Transport and Transformation of Chemical Substances in Subsurface Environments", cooperative agreement number CR811142-01-0. The principal investigators are Dr. Douglas C. Kent and Dr. Jan Wagner. Ms. Lorraine LeMaster is the principal programmer. The cooperation and assistance of Chi-Chung Chang, for his help and suggestions during testing of the preprocessor, is gratefully acknowledged. Appreciation is also extended to James Alexander and George Duckwitz for their work during the early stages of this project, to the project officer, Carl G. Enfield, and to the entire staff of the Robert S. Kerr Environmental Research Center.

The methods described herein can be used with the modified N.R.C. version of the U.S.G.S. Solute Transport Model to estimate or predict the concentrations in a contaminant plume. The value or accuracy of the prediction can be no better than the estimate of the hydrgeological and chemical parameters that are used in the model simulation. Because these parameters can range within wide limits, so also can the prediction. This preprocessor was developed to allow the user to spend a minimum amount of time adjusting these parameters, especially during the predictive phase. The results of these preedictive techniques must not be allowed to take precedence over sound field investigation, data collection, and interpretation at the study sites.

The information contained in this manual is believed to be correct at the time of publication. However, the authors assume no liability resulting from the use of the methods described in this publication.

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MODIFIED N.R.C. VERSION
OF THE U.S.G.S. SOLUTE TRANSPORT MODEL,
VOLUME 2: INTERACTIVE PREPROCESSOR

1.0 INTRODUCTION

The purpose of this report is to describe an interactive program (preprocessor) that was developed to aid in the creation and modification of input data sets for use with a modified version (Kent, et al, 1986) of the N.R.C. version (Tracy, 1982) of the U.S.G.S. Solute Transport Model developed by Konikov and Bredehoeft (1978).

The preprocessor described in this manual is intended as a companion to the manual titled "Modified N.R.C. Version of the U.S.G.S. Solute Transport Model, Volume 1: Modifications" (Kent, et al, 1986). Both manuals have been prepared for the U.S. Environmental Protection Agency under a contract entitled "Mathematical Models for Subsurface Transport and Fate Predictions."

The project is providing a well-documented set of transport and fate models ranging from relatively simple analytical models to complex numerical models. These models will be available on the EPA computer network in a format which would enable users to access the code, enter the required data, run the model, and receive the model results without extensive technical system support.

Fairly complex numerical models are required for predicting the transport and fate of toxic chemicals in heterogeneous systems. The preparation of the input data file usually represents a significant, and often tedious, effort in the use of numerical models. However, the use of interactive computer codes can efficiently manage data. The interactive code not only simplifies data entry but also enables the user to gain some insight into the effects of physical and chemical parameters on the movement and behavior of a tracer in a contaminant plume.

The interactive computer code for the preprocessor is written in PL/I and has been tested on an IBM 3081D computer as well as Kaypro-2 and IBM-PC microcomputers. The Kaypro-2 uses the CPM operating system and the IBM-PC uses PC-DOS. The program has been developed to assist the user in preparing the input data files for batch processing of the modified N.R.C. version of the U.S.G.S. Solute Transport Model (Kent, et al, 1986) on the IBM 3081D. The preprocessor prompts the user for the required input data. An editor is included to facilitate the correction of errors or the modification of an input data set. The code also generates job control statements required to submit a job for batch processing on an IBM 3081D, IBM-PC (or other MS-DOS micro-computer), and DEC/VAX.

The modified N.R.C. version of the U.S.G.S. Solute Transport Model has also been tested on an IBM-PC microcomputer with 512K of random access memory. Some minor changes have been made to the preprocessor to facilitate the execution of the model on the IBM-PC. The prompts to set execution for the IBM-PC are described in Appendix IX. Appendix X contains the information specific to setting up for execution on a DEC/VAX.

1.1 Objectives

The broad objective of this project is to develop and/or modify mathematical models in order to provide user friendly access to models which are capable of predicting the probable concentrations of chemical substances in ground-water systems resulting from the release of these substances onto the ground surface or into the subsurface.

More specifically, the objectives of this project report are to provide program documentation and a User's Manual for an interactive program to be utilized in creating and modifying input data files for use with the modified N.R.C. version of the U.S.G.S. Solute Transport Model (Kent, et al, 1986).

The project report contains the following:

(1) Program Documentation and

(2) User's Manual

Documentation of the program is developed to include (a) the motivation for and limitations (assumptions) of the program, (b) a description of the methods used in the program, (c) listings of the source code, (d) one or more sets of test data, and (e) guidelines for further modifications which might be required to enable the use of the model on a variety of computer systems. A master copy of all source codes are prepared on 5.25 inch disks or magnetic tapes in a format specified for the system to be utilized. This type of program documentation has been written for those who have some background in mathematics and/or computer systems and languages. These documents are intended to serve as reference manuals for individuals who may be responsbile for maintaining, modifying, or transferring computer codes; as well as users who are also interested in the details of the computer codes.

The User's Manual includes (a) practical implications of assumptions and restrictions which are incorporated in the program, (b) the type of computer resources which may be required (for example computer memory, execution time, and input and output devices), (c) input data requirements and formats, and (d) detailed, step-by-step examples of practical problems. The user's manual is written in layman terms for those who may not have a background or experience in numerical methods or computer programming.

1.2 History

The preprocessor is designed for the modified N.R.C. version of the U.S.G.S. Solute Transport Model (Kent, et al, 1986). The model is based on a ground-water flow equation which is coupled with the solute-transport equation in the model. The computer program uses an Alternating-Direction Implicit Procedure (ADIP) to solve a system of algebraic equations generated from a finite-difference approximation to the ground-water flow equation. The method of characteristics is used to solve the solute-transport equation. The method of characteristics uses a particle tracking procedure to represent convective transport and a two-step explicit procedure to solve a finite-difference equation that describes the effects of hydrodynamic dispersion, fluid sources and sinks, and divergence of velocity.

Radioactive decay and equilibrium adsorption were incorporated for the U.S. Nuclear Regulatory Commission (Tracy, 1982). Procedures for radioactive decay, linear isotherm, Langmuir isotherm, and the Freundlich isotherm have been added to the U.S.G.S. Solute Transport Model developed by Konikow and Bredehoeft (1978).

The principal investigators assume that users will have some background in hydrogeology, soil science, or a similar field; and will have a basic understanding of the physical, chemical, and/or biological processes involved in a specific problem to be addressed. With this background, a user's manual is intended to introduce the user to the program adaptation and areas of application and to provide tutorials on data requirements, model access and execution, and the management and interpretation of model output.

1.3 Applications

The U.S.G.S. Solute Transport Model was selected since it is well documented and maintained. The modifications by Tracy (1982) to include adsorption and first-order reactions were incorporated in the user interface. Additional modifications were made to the N.R.C. version of the U.S.G.S. Transport Model. The modifications include options for selecting (1) only the potentiometric head calculations or the potentiometric head and solute transport calculations, (2) water-table or confined-aquifer conditions, (3) adjustment of transmissivities after each time step to accommodate unconfined flow, (4) calculation of the initial saturated thickness from the bottom elevation and potentiometric head in an unconfined system, and (5) incorporation of the SIP iterative technique which is an option for solving the fluid-flow equations in the U.S.G.S. transport model. These modifications are described in a companion manual entitled "Modified N.R.C. Version of the U.S.G.S. Solute Transport Model, Volume 1: Modifications" (Kent, et al, 1986).

The preprocessor, along with the model described above, will enable variaous groups within federal and state regulatory agencies, as well as the private sector, to apply an easily accessable, flexible version of the N.R.C. version of this model to the analysis of various study sites. This model can evaluate sites such as those involving landfill or groundwater pollution related to conservative and non-conservative elements (eg. brine pollution and hazardous elements). The effects of pumping and injection wells, recharge, constant head, nonhomogeneities in the aquifer, dispersive coefficients, and no-flow boundaries in the vicinity of the site can also be simulated.

2.0 USER'S GUIDE FOR THE INTERACTIVE PREPROCESSOR

2.1 General Description

Interactive capabilities to the modified N.R.C. version of the U.S.G.S. Solute Transport Model (Kent, et al, 1986) were developed to aid users in creating the input data set. The input parameters defined in Appendix III are labeled in each prompt. Provisions have been made in this routine for all modifications described in the companion manual, "Modified N.R.C. Version of the U.S.G.S. Solute Transport Model, Volume 1: Modifications" (Kent, et al,1986). All data input by the modeler is shown in lower case. Prompts are shown in upper case.

The preprocessor is written in PL/1; a source listing is in Appendix I. The source programs must be compiled and linked. The data set created by the preprocessor includes the Job Control Language (JCL) used at Oklahoma State University on the IBM 3081D computer. Versions of this preprocessor have been developed with the JCL necessary for the model to execute on a microcomputer with an MS-DOS operating system and on a DEC/VAX. The JCL for MS-DOS is described in Appendix IX. Appendix X describes the JCL for the DEC/VAX. This JCL may need to be altered, according to the requirements of the computer system being utilized. The preprocessor allocates the input data set as a standard fixed binary sequential data set with a logical record length of 80. The data set is the mass storage equivalent of a card deck. All input data is stored in this data set at the end of the preprocessor routine.

A controlling program, also written in PL/1, is used to initiate the preprocessor. The modeler enters

```
koni
```

to begin execution of the controlling program. An introductory screen is displayed followed by the opening menu.

```
                    MODIFIED N.R.C. VERSION
               OF THE U.S.G.S. SOLUTE TRANSPORT MODEL,
                VOLUME 2:  INTERACTIVE PREPROCESSOR
                                BY
               D.C. KENT, L. LEMASTER, AND J. WAGNER
                                FOR
                U.S. ENVIRONMENTAL PROTECTION AGENCY

      CHOOSE ACTION:
           1)  CREATE NEW DATA
           2)  MODIFY EXISTING DATA
           3)  END PROGRAM
      (ENTER CORRESPONDING NUMBER):
```

Option 1 is described in section 2.2, Option 2 in section 2.3, and Option 3 in section 2.4, of this report.

2.2 Preprocessor

The choice of Option 1 on the menu in section 2.1 creates the data set where the JCL and input parameters are stored in their proper formats. The first prompt asks for the name of the data set.

```
ENTER THE RUNFILE DATA SET NAME (DON'T WORRY, IF THE DATA SET IS
NOT THERE, IT WILL BE CREATED):  longis23.cntl
```

2.2.1 Job Control Language

After the data set name is entered, prompts for the JCL begin. First, the jobname is requested. Note, prompts for the JCL necessary to execute the model on a microcomputer (under MS-DOS) are described in Appendix IX. JCL for the DEC/VAX is described in Appendix X.

```
ENTER THE JOBNAME:  longis
```

According to IBM convention, this is any name up to eight characters long and beginning with an alphabetic character. The jobname entered was "longis". After the jobname is entered the prompt for the simulation time is displayed:

```
ENTER THE TIME LIMIT FOR THE JOB,
     1)  5 SECONDS OR LESS
     2)  40 SECONDS OR LESS
     3)  5 MINUTES OR LESS
     4)  OVER 5 MINUTES
CHOOSE ONE OF THE ABOVE:  2
```

During calibration (hydraulic simulation only), 40 seconds (Option 2) should provide sufficient CPU time for execution. As a general rule, this model, will require up to five minutes execution time (Option 3) for a solute transport simulation. For a discussion on error checking using the model (not the preprocessor), see section 2.5. Here, Option 3 was selected since tahe simulation will include solute transport.

For the output to be placed in a specific output window in the OSU computer room, the "room" needs to be designated. The prompt for this is:

```
ENTER THE "ROOM" FOR THE OUTPUT WINDOW.
SINGLE CHARACTER,
BETWEEN "A" AND "Z":  c
```

To have the results of the simulation put on disk, the output data set needs to be allocated. The prompt for this is:

```
ENTER THE COMPLETE OUTPUT DATA SET NAME
(NO QUOTES):  u11834c.longis23.outlist
```

The output data set name is "u11834c.longis23.outlist". The data set that is to be used with graphics packages such as the Statistical Analysis System (SAS), is now allocated and can be accessed using independent SAS programs. Sample SAS programs, results, and descriptions are provided in Appendices VI and VIII. The formats used for this data set are indicated in Appendix VII. The prompt is:

```
ENTER THE COMPLETE GRAPHICS OUTPUT DATA SET NAME
(NO QUOTES):  u11834c.longis23.graph
```

The graphics data set name is "u11834c.longis23.graph".

After these are entered, the JCL is displayed:

```
THE FOLLOWING IS THE JCL
      1) //LONGIS JOB (?????,TSO-TR-KONI),KONIKOWRUN,
      2) //TIME=(0,40),CLASS=A,
      3) //MSGCLASS=X,NOTIFY=*
      4) /*PASSWORD ????
      5) /*JOBPARM ROOM=C
      6) //*
      7) //KONI EXEC PGM=KONIKOW,REGION=1500K
      8) //STEPLIB  DD  DISP=SHR,DSN=U11236C.KONI.LOAD
      9) //FT06F001  DD  DSN=U11834C.LONGIS23.OUTLIST,UNIT=STORAGE,
     10) //               SPACE=(TRK,(10,10)),DISP=(MOD,CATLG),
     11) //               DCB=(RECFM=VBA,LRECL=133,BLKSIZE=7448)
     12) //FT10F001  DD  DSN=U11834C.LONGIS23.GRAPH,UNIT=STORAGE,
     13) //               SPACE=(TRK,(10,10)),DISP=(MOD,CATLG),
     14) //               DCB=(RECFM=FB,LRECL=80,BLKSIZE=7440)
     15) //FT07F001  DD  SYSOUT=B
     16) //FT05F001  DD  *
DO YOU WISH TO CHANGE ANYTHING  (Y/N):  y
```

If the JCL is correct, then "n" is entered. If any error is present, then "y" is entered ("y" and "n" are sufficient to represent "yes" and "no".) In this example, "y" was entered. The prompt is:

```
ENTER THE NUMBER OF THE LINE YOU WISH TO CHANGE,
(ONLY ONE AT A TIME):  1
```

The jobname was entered incorrectly, so line number 1 was entered. The requested line is listed and changed as shown below.

```
//LONGIS JOB (?????,TSO-TR-KONI),KONIKOWRUN,
ENTER THE COMPLETE LINE . . .://U11834C job (?????,tso-tr-koni),
konikowrun,
```

Note that the correction is entered as one line. The line may wrap around on the terminal screen, if necessary. After the change is entered, The JCL is displayed again.

```
     1) //U11834C JOB (?????,TSO-TR-KONI),KONIKOWRUN,
     2) //   TIME=(0,40),CLASS=A,
     3) //   MSGCLASS=X,NOTIFY=*
     4) /*PASSWORD ????
     5) /*JOBPARM ROOM=C
     6) //*
     7) //KONI EXEC PGM=KONIKOW,REGION=1500K
     8) //STEPLIB  DD  DISP=SHR,DSN=U11236C.KONI.LOAD
     9) //FT06F001 DD  DSN=U11834C.LONGIS23.OUTLIST,UNIT=STORAGE,
    10) //              SPACE=(TRK,(10,10)),DISP=(MOD,CATLG),
    11) //              DCB=(RECFM=VBA,LRECL=133,BLKSIZE=7448)
    12) //FT10F001 DD  DSN=U11834C.LONGIS23.GRAPH,UNIT=STORAGE,
    13) //              SPACE=(TRK,(10,10)),DISP=MOD,CATLG),
    14) //              DCB=(RECFM=FB,LRECL=80,BLKSIZE=7440)
    15) //FT07F001 DD  SYSOUT=B
    16) //FT05F001 DD  *
 DO YOU WISH TO CHANGE ANYTHING  (Y/N):  n
```

If the JCL is correct, then "n" is entered and the program will proceed to the next prompt.

2.2.2 Verify and Exit

The next prompt is used within the preprocessor to allow the user to alter data immediately after the value is entered.

```
DO YOU WISH TO VERIFY ALL ENTRIES (Y/N):  n
```

If verification is desired, enter "y" (here it is not desired). The following prompt would appear after each variable prompt.

```
VERIFY (Y/N):
```

If the value just entered needs to be changed, enter "n". Another prompt then appears, requesting the corrected data to be entered. If the data just entered does not need to be altered, enter "y". The next prompt is then displayed.

To stop the preprocessor before all of the data has been input, respond to any prompt with "exit". Control will be returned to the controlling program. No data entered or modified will be saved. If in the preprocessor, the data set will not be created. If in the editor, the data set will not be updated.

2.2.3 Individual Variables

The following prompts are self explanatory and are listed below with the input data. If any questions should arise about a variable, refer to the description of the parameter in Appendix III.

```
ENTER THE TITLE, DESCRIPTIVE OF THE PROBLEM.
MAXIMUM OF 80 CHARACTERS.
VARIABLE "TITLE":  babylon,levelb,chloride

ENTER THE NUMBER OF NODES IN THE "X" DIRECTION.
("X" REFERS TO COLUMNS.)
MINIMUM OF 3, MAXIMUM OF 60.
VARIABLE "NX":  18
```

Note that in all references to the "X" direction the column number is to be used. Similarly, all references to the "Y" direction should use the row number. When executed on a microcomputer, the maximum number of columns and rows is 20. The maximum number of particlesto be used in the chemical transport (NPMAX) is 3200.

```
ENTER THE NUMBER OF NODES IN THE "Y" DIRECTION.
("Y" REFERS TO ROWS.)
MINIMUM OF 3, MAXIMUM OF 60.
VARIABLE "NY":  31

ENTER THE MAXIMUM NUMBER OF PARTICLES.
MAXIMUM OF 9850.
VARIABLE "NPMAX":  3620

ENTER THE NUMBER OF PARTICLES PER NODE.
OPTIONS = 4,5,8,9:
VARIABLE "NPTPND":  4

ENTER THE NUMBER OF OBSERVATION POINTS TO BE
SPECIFIED NEXT.  MAXIMUM OF 5.
VARIABLE "NUMOBS":

NOTE:  OBSERVATION WELLS SHOULD NOT BE PLACED IN THE
       FIRST OR LAST ROWS OR COLUMNS.

ENTER THE "X" COORDINATE OF OBSERVATION POINT 1.
VARIABLE "IXOBS(1)":  8

ENTER THE "Y" COORDINATE OF OBSERVATION POINT 1.
VARIABLE "IYOBS(1)":  4
```

```
ENTER THE "X" COORDINATE OF OBSERVATION POINT 2.
VARIABLE "IXOBS(2)":  10

ENTER THE "Y" COORDINATE OF OBSERVATION POINT 2.
VARIABLE "IYOBS(2)":  16

ENTER THE "X" COORDINATE OF OBSERVATION POINT 3.
VARIABLE "IXOBS(3)":  10

ENTER THE "Y" COORDINATE OF OBSERVATION POINT 3.
VARIABLE "IYOBS(3)":  26

ENTER THE NUMBER OF NODE IDENTIFICATION CODES
TO BE SPECIFIED.  MAXIMUM OF 10.
VARIABLES "NCODES":  1

ENTER NODE IDENTIFICATION CODE 1.
VARIABLE "ICODE(1)":  2

ENTER CORRESPONDING LEAKANCE ((FT/SEC)/FT).
(VERTICAL PERMEABILITY/THICKNESS OF CONFINING LAYER.)
MAXIMUM LENGTH OF 10, REAL NUMBER.
NOTE:  (FT/SEC)/FT = (GPD/FT)/FT * 1.54723 E-6
VARIABLE "FCTR1(1)":  1.0
```

To represent a constant head boundary, set FCTR1 > 0.09 (here, set to 1.0).

Note: Any real number may be entered in scientific notation; for example, 9.E99.

```
ENTER CONCENTRATION (MG/L) FOR ICODE 1.
MAXIMUM LENGTH OF 10, REAL NUMBER.
VARIABLE "FCTR2(1)":  0

ENTER OPTION TO RETAIN RECHARGE MATRIX VALUES:
     0)  RETAIN VALUES.
     1)  USE OF VALUE OF FCTR3.
VARIABLE "OVERRD(1)":  0
```

If "1" is entered, the following prompt would appear:

```
ENTER RECHARGE/DISCHARGE (FT/SEC) FOR ICODE 1.
NEGATIVE FOR RECHARGE, POSITIVE FOR DISCHARGE.
MAXIMUM LENGTH OF 10, REAL NUMBER.
NOTE:  FT/SEC = IN/YR * 26.7918 E-10
ENTER VARIABLE "FCTR3(1)":
```

since the recharge/discharge is to be retained, prompting continues with the storage coefficient.

```
ENTER THE STORAGE COEFFICIENT.
0 FOR STEADY FLOW PROBLEMS.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "S":  .0005
```

If the storage coefficient were zero, variables TIMX and TINIT would not be prompted but automatically set to zero. Prompting continues with the following:

```
ENTER THE NUMBER OF PUMPING PERIODS.
MAXIMUM OF 50.
VARIABLE "NPMP":  3

ENTER THE MAXIMUM NUMBER OF TIME STEPS IN
PUMPING PERIOD 1.  MAXIMUM OF 100.
VARIABLE "NTIM":  3

PUMPING PERIOD 1:
ENTER THE TIME STEP INTERVAL FOR PRINTING
HYDRAULIC AND CHEMICAL OUTPUT DATA.
VARIABLE "NPNT":  1

PUMPING PERIOD 1:
ENTER THE NUMBER OF ITERATION PARAMETERS FOR
ADIP.  USUALLY FROM 4 TO 7.
VARIABLE "NITP":  7
```

It should be noted that NITP is ignored if the SIP algorithm is used. The number of SIP iteration parameters is set to 10 in the model.

```
PUMPING PERIOD 1:
ENTER THE MAXIMUM ALLOWABLE NUMBER OF ITERATIONS
IN ADIP OR SIP.  USUALLY FROM 100 TO 200.
VARIABLE "ITMAX":  100

PUMPING PERIOD 1:
ENTER THE PARTICLE MOVEMENT INTERVAL (IMOV)
FOR PRINTING CHEMICAL OUTPUT DATA.
SPECIFY 0 TO PRINT ONLY AT THE END OF TIME STEPS.
VARIABLE "NPNTMV":  0

PUMPING PERIOD 1:
ENTER THE OPTION FOR PRINTING COMPUTED
VELOCITIES.
     0)  DO NOT PRINT.
     1)  PRINT FOR FIRST TIME STEP.
     2)  PRINT FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNTVL":  0
```

```
PUMPING PERIOD 1:
ENTER THE OPTION FOR PRINTING COMPUTED
DISPERSION EQUATION COEFFICIENTS.
     0)  DO NOT PRINT.
     1)  PRINT FOR FIRST TIME STEP.
     2)  PRINT FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNTD":  0

PUMPING PERIOD 1:
ENTER THE OPTION TO PRINT COMPUTED CHANGES IN
CONCENTRATION.
     0)  DO NOT PRINT.
     1)  PRINT.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPDELC":  1

PUMPING PERIOD 1:
ENTER THE OPTION TO PUNCH VELOCITY DATA.
     0)  DO NOT PUNCH.
     1)  PUNCH FOR FIRST TIME STEP.
     2)  PUNCH FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNCHV":  0

PUMPING PERIOD 1:
ENTER THE LENGTH OF THE PUMPING PERIOD (YEARS).
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "PINT":  3.
```

Since the storage coefficient was not equal to zero, the variables TIMX and TINIT are prompted for here:

```
PUMPING PERIOD 1:
ENTER THE TIME INCREMENT MULTIPLIER FOR
TRANSIENT FLOW PROBLEMS.
THIS IS DISREGARDED IF S=0.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TIMX":  1.

PUMPING PERIOD 1:
ENTER THE SIZE OF THE INITIAL TIME STEP
IN SECONDS.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TINIT":  3.1E7

PUMPING PERIOD 1:
ENTER THE NUMBER OF PUMPING OR INJECTION
WELLS TO BE SPECIFIED.
MAXIMUM OF 50.
VARIABLE "NREC":  8
```

```
NOTE:  PUMPING/INJECTION WELLS SHOULD NOT BE PLACED IN THE
       FIRST OR LAST ROWS OR COLUMNS.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 1.
VARIABLE "IX(1)":  8

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 1.
VARIABLE "IY(1)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 1.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(1)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 1.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(1)":  250.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 2.
VARIABLE "IX(2)":  9

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 2.
VARIABLE "IY(2)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 2.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(2)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 2.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(2)":  220.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 3.
VARIABLE "IX(3)":  10

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 3.
VARIABLE "IY(3)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 3.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(3)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 3.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(3)":  240.
```

```
ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 4.
VARIABLE "IX(4)":  11

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 4.
VARIABLE "IY(4)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 4.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE: FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(4)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 4.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(4)":  240.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 5.
VARIABLE "IX(5)":  8

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 5.
VARIABLE "IY(5)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 5.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(5)":  .0724

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 6.
VARIABLE "IX(6)":  9

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 6.
VARIABLE "IY(6)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 6.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(6)":  .0724

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 7.
VARIABLE "IX(7)":  10

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 7.
VARIABLE "IY(7)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 7.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(7)":  .0724
```

```
ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 8.
VARIABLE "IX(8)":  11

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 8.
VARIABLE "IY(8)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 8.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(8)":  .0724
```

The next prompt is used to change selected parameters for each subsequent pumping period.

```
DO YOU WISH TO MAKE ANY REVISIONS TO PUMPING PERIOD 2.
VARIABLE "ICHK"  (Y/N):  y

ENTER THE MAXIMUM NUMBER OF TIME STEPS IN
PUMPING PERIOD 2.  MAXIMUM OF 100.
VARIABLE "NTIM":  1

PUMPING PERIOD 2:
ENTER THE TIME STEP INTERVAL FOR PRINTING
HYDRAULIC AND CHEMICAL OUTPUT DATA.
VARIABLE "NPNT":  1

PUMPING PERIOD 2:
ENTER THE NUMBER OF ITERATION PARAMETERS FOR
ADIP.  USUALLY FROM 4 TO 7.
VARIABLE "NITP":  7

PUMPING PERIOD 2:
ENTER THE MAXIMUM ALLOWABLE NUMBER OF ITERATIONS
IN ADIP OR SIP.  USUALLY FROM 100 TO 200.
VARIABLE "ITMAX":  100

PUMPING PERIOD 2:
ENTER THE PARTICLE MOVEMENT INTERVAL (IMOV)
FOR PRINTING CHEMICAL OUTPUT DATA.
SPECIFY 0 TO PRINT ONLY AT THE END OF TIME STEPS.
VARIABLE "NPNTMV":  0

PUMPING PERIOD 2:
ENTER THE OPTION FOR PRINTING COMPUTED
VELOCITIES.
     0)  DO NOT PRINT.
     1)  PRINT FOR FIRST TIME STEP.
     2)  PRINT FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNTVL":  0
```

```
PUMPING PERIOD 2:
ENTER THE OPTION FOR PRINTING COMPUTED
DISPERSION EQUATION COEFFICIENTS.
     0)  DO NOT PRINT.
     1)  PRINT FOR FIRST TIME STEP.
     2)  PRINT FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNTD":  0

PUMPING PERIOD 2:
ENTER THE OPTION TO PRINT COMPUTED CHANGES IN
CONCENTRATION.
     0)  DO NOT PRINT.
     1)  PRINT.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPDELC":  1

PUMPING PERIOD 2:
ENTER THE OPTION TO PUNCH VELOCITY DATA.
     0)  DO NOT PUNCH.
     1)  PUNCH FOR FIRST TIME STEP.
     2)  PUNCH FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNCHV":  0

PUMPING PERIOD 2:
ENTER THE LENGTH OF THE PUMPING PERIOD (YEARS).
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "PINT":  4

PUMPING PERIOD 2:
ENTER THE TIME INCREMENT MULTIPLIER FOR
TRANSIENT FLOW PROBLEMS.
THIS IS DISREGARDED IF S=0.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TIMX":  1.

PUMPING PERIOD 2:
ENTER THE SIZE OF THE INITIAL TIME STEP
IN SECONDS.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TINIT":  1.2E8

PUMPING PERIOD 2:
ENTER THE NUMBER OF PUMPING OR INJECTION
WELLS TO BE SPECIFIED.
MAXIMUM OF 50.
VARIABLE "NREC":  8

NOTE:  PUMPING/INJECTION WELLS SHOULD NOT BE PLACED IN THE
       FIRST OR LAST ROWS OR COLUMNS.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 1.
VARIABLE "IX(1)":  8
```

```
ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 1.
VARIABLE "IY(1)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 1.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(1)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 2.
VARIABLE "IX(2)":  9

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 2.
VARIABLE "IY(2)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 2.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(2)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 3.
VARIABLE "IX(3)":  10

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 3.
VARIABLE "IY(3)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 3.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(3)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 4.
VARIABLE "IX(4)":  11

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 4.
VARIABLE "IY(4)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 4.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(4)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 5.
VARIABLE "IX(5)":  8

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 5.
VARIABLE "IY(5)":  29
```

```
ENTER THE RATE (FT**3/SEC) FOR WELL 5.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(5)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 6.
VARIABLE "IX(6)":  9

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 6.
VARIABLE "IY(6)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 6.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(6)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 7.
VARIABLE "IX(7)":  10

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 7.
VARIABLE "IY(7)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 7.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(7)":  0.0

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 8.
VARIABLE "IX(8)":  11

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 8.
VARIABLE "IY(8)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 8.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(8)":  0.0
```

(End of the prompts for the variables in second pumping period.)

```
DO YOU WISH TO MAKE ANY REVISIONS TO PUMPING PERIOD 3.
VARIABLE "ICHK"  (YES OR NO):  y

PUMPING PERIOD 3:
ENTER THE MAXIMUM NUMBER OF TIME STEPS IN A
PUMPING PERIOD.  MAXIMUM OF 100.
VARIABLE "NTIM":  3
```

```
PUMPING PERIOD 3:
ENTER THE TIME STEP INTERVAL FOR PRINTING
HYDRAULIC AND CHEMICAL OUTPUT DATA.
VARIABLE "NPNT":  1

PUMPING PERIOD 3:
ENTER THE NUMBER OF ITERATION PARAMETERS FOR
ADIP.  USUALLY FROM 4 TO 7.
VARIABLE "NITP":  7

PUMPING PERIOD 3:
ENTER THE MAXIMUM ALLOWABLE NUMBER OF ITERATIONS
IN ADIP OR SIP.  USUALLY FROM 100 TO 200.
VARIABLE "ITMAX":  100

PUMPING PERIOD 3:
ENTER THE PARTICLE MOVEMENT INTERVAL (IMOV)
FOR PRINTING CHEMICAL OUTPUT DATA.
SPECIFY 0 TO PRINT ONLY AT THE END OF TIME STEPS.
VARIABLE "NPNTMV":  0

PUMPING PERIOD 3:
ENTER THE OPTION FOR PRINTING COMPUTED
VELOCITIES.
      0)  DO NOT PRINT.
      1)  PRINT FOR FIRST TIME STEP.
      2)  PRINT FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNTVL":  0

PUMPING PERIOD 3:
ENTER THE OPTION FOR PRINTING COMPUTED
DISPERSION EQUATION COEFFICIENTS.
      0)  DO NOT PRINT.
      1)  PRINT FOR FIRST TIME STEP.
      2)  PRINT FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNTD":  0

PUMPING PERIOD 3:
ENTER THE OPTION TO PRINT COMPUTED CHANGES IN
CONCENTRATION.
      0)  DO NOT PRINT.
      1)  PRINT.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPDELC":  1

PUMPING PERIOD 3:
ENTER THE OPTION TO PUNCH VELOCITY DATA.
      0)  DO NOT PUNCH.
      1)  PUNCH FOR FIRST TIME STEP.
      2)  PUNCH FOR ALL TIME STEPS.
CHOOSE ONE OF THE ABOVE.
VARIABLE "NPNCHV":  0
```

```
PUMPING PERIOD 3:
ENTER THE LENGTH OF THE PUMPING PERIOD (YEARS).
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "PINT":  3.

PUMPING PERIOD 3:
ENTER THE TIME INCREMENT MULTIPLIER FOR
TRANSIENT FLOW PROBLEMS.
THIS IS DISREGARDED IF S=0.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TIMX":  1.

PUMPING PERIOD 3:
ENTER THE SIZE OF THE INITIAL TIME STEP
IN SECONDS.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TINIT":  3.2E7

PUMPING PERIOD 3:
ENTER THE NUMBER OF PUMPING OR INJECTION
WELLS TO BE SPECIFIED.
MAXIMUM OF 50.
VARIABLE "NREC":  8

NOTE:  PUMPING/INJECTION WELLS SHOULD NOT BE PLACED IN THE
       FIRST OR LAST ROWS OR COLUMNS.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 1.
VARIABLE "IX(1)":  8

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 1.
VARIABLE "IY(1)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 1.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(1)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 1.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(1)":  250.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 2.
VARIABLE "IX(2)":  9

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 2.
VARIABLE "IY(2)":  3
```

```
ENTER THE RATE (FT**3/SEC) FOR WELL 2.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(2)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 2.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(2)":  220.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 3.
VARIABLE "IX(3)":  10

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 3.
VARIABLE "IY(3)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 3.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(3)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 3.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(3)":  240.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 4.
VARIABLE "IX(4)":  11

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 4.
VARIABLE "IY(4)":  3

ENTER THE RATE (FT**3/SEC) FOR WELL 4.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(4)":  -.0724

ENTER THE CONCENTRATION OF THE INJECTED
FLUID (MG/L) FOR WELL 4.
MAXIMUM LENGTH OF 8, REAL NUMBER.
VARIABLE "CNRECH(4)":  240.

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 5.
VARIABLE "IX(5)":  8

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 5.
VARIABLE "IY(5)":  29
```

```
ENTER THE RATE (FT**3/SEC) FOR WELL 5.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(5)":  .0724

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 6.
VARIABLE "IX(6)":  9

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 6.
VARIABLE "IY(6)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 6.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(6)":  .0724

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 7.
VARIABLE "IX(7)":  10

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 7.
VARIABLE "IY(7)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 7.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(7)":  .0724

ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL 8.
VARIABLE "IX(8)":  11

ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL 8.
VARIABLE "IY(8)":  29

ENTER THE RATE (FT**3/SEC) FOR WELL 8.
POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.
MAXIMUM LENGTH OF 8, REAL NUMBER.
NOTE:  FT**3/SEC = GAL/MIN * 0.0022278
VARIABLE "REC(8)":  .0724
```

(End of the prompts for the variables in third pumping period.)

```
ENTER THE CONVERGENCE CRITERIA FOR THE FLOW
EQUATION.  USUALLY LESS THAN 0.1.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "TOL":  .01

ENTER THE EFFECTIVE POROSITY.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "POROS":  .25
```

```
ENTER THE CHARACTERISTIC LENGTH (FEET).
(LONGITUDINAL DISPERSIVITY).
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "BETA":  40
```

Longitudinal dispersivity is the dispersivity in the major direction of flow; whereas transverse dispersivity is orthogonal to the major direction of flow.

```
ENTER THE NODE SIZE IN THE "X" DIRECTION (FEET).
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "XDEL":  500

ENTER THE NODE SIZE IN THE "Y" DIRECTION (FEET).
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "YDEL":  500

ENTER THE RATIO OF TRANSVERSE TO
LONGITUDINAL DISPERSIVITY.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "DLTRAT":  .2

ENTER THE MAXIMUM CELL DISTANCE PER PARTICLE
MOVE.  VALUE BETWEEN 0 AND 1.0.
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "CELDIS":  .5

ENTER THE RATIO OF TRANSMISSIVITY TENSORS
(T(YY) TO T(XX)).
(USE 1.0 FOR ISOTROPIC AQUIFER.  IF ANISOTROPIC,
MAJOR DIRECTION OF FLOW SHOULD BE ALONG COLUMNS.)
MAXIMUM LENGTH OF 5, REAL NUMBER.
VARIABLE "ANFCTR":  1
```

Decay and sorbtion data are requested next.

```
IS DECAY TO BE SIMULATED (Y/N)?
VARIABLE "NDECAY":  n
```

If decay was to be simulated, the following prompt would appear.

```
ENTER DECAY HALFLIFE (YEARS).
MAXIMUM LENGTH OF 10, REAL NUMBER.
VARIABLE "DCYTIM":

INDICATE WHICH SORBTION SIMULATION
IS TO BE USED:
     0)  NONE
     1)  LINEAR
     2)  LANGMUIR
     3)  FREUDLICH
VARIABLE "NSORB":  0
```

If retardation was to be simulated the following prompts would appear.

```
ENTER THE PARTICLE DENSITY OF THE AQUIFER (GM/CM**3).
MAXIMUM LENGTH OF 10, REAL NUMBER.
VARIABLE "DENROC":

ENTER VALUE OF "KD" (ML/G).
MAXIMUM LENGTH OF 10, REAL NUMBER.
VARIABLE "SORBQR":
```

If the Langmuir sorption simulation is requested, the next prompt would be:

```
ENTER THE SORPTION SATURATION VALUE FOR
THE LANGMUIR.
MAXIMUM LENGTH OF 10, REAL NUMBER.
VARIABLE "SORBST":
```

If the Freundlich sorbtion simulation is requested, the next prompt would be:

```
ENTER THE VALUE OF
ALPHA FOR THE FREUDLICH ISOTHERM.
MAXIMUM LENGTH OF 10, REAL NUMBER.
VARIABLE "SORBAL":
```

The next group of variables are flags for routines added to the model for this project. These modifications are described in the companion manual entitled "Modified N.R.C. Version of the U.S.G.S. Solute Transport Model, Volume 1: Modifications" (Kent, et al, 1986).

```
CHOOSE THE ITERATIVE PROCEDURE DESIRED TO SOLVE
A FINITE DIFFERENCE APPROXIMATION TO THE
GROUND-WATER FLOW EQUATION.
     0)  ADIP -- ALTERNATING DIRECTION IMPLICIT PROCEDURE
     1)  SIP --  STRONGLY IMPLICIT PROCEDURE
VARIABLE "ISOLV":  0

IS THIS SIMULATION HEAD ONLY OR SOLUTE TRANSPORT?
     0)  TRANSPORT
     1)  HEAD ONLY
VARIABLE "HEAD":  0

IS THE AQUIFER BEING MODELED CONFINED OR
UNCONFINED?
     0)  CONFINED
     1)  UNCONFINED
VARIABLE "FCON":  1
```

```
DO YOU WISH TO ENTER THE TRANSMISSIVITY
OR PERMEABILITY FOR THE AREA?
     0)  TRANSMISSIVITY
     1)  PERMEABILITY
VARIABLE "TP":  0

DO YOU WISH TO ENTER THE BOTTOM ELEVATION
OR SATURATED THICKNESS FOR THE AREA?
     0)  SATURATED THICKNESS
     1)  BOTTOM
VARIABLE "BTM":  0
```

Note: BTM is automatically set to 0 if FCON = 0.

2.2.4 Matrix Editor

Some of the following input data may require a matrix. A matrix editor has been developed to input the matrices. The size of the matrix is controlled by the variables NX (number of columns) and NY (number of rows). The variables involved are:

a. Transmissivity/Hydraulic Conductivity
b. Saturated Thickness/Bottom Elevation
c. Potentiometric Head
d. Recharge
e. Node Identification
f. Concentration

The matrix editor is invoked when a variable is indicated as not being constant. The model requires a no-flow boundary (artificial) surrounding the area being studied. To represent this, the modeler must set the first and last rows and columns of each matrix to 0 (zero). If a variable is indicated as constant, the model will set the no-flow boundary from previous matrices. If an irregular boundary is to be represented, the first matrix (Transmissivity/Hydraulic Conductivity) *must* be entered as variable.

2.2.4.1 General Matrix Editor Commands

The matrix editor displays twelve rows of a matrix at one time. The number of columns displayed depends on the field size of each element of the matrix. The commands "shift" and "list" are used to view the columns and rows that are not initially displayed or to display changes to the matrix. For example, if the user wants to edit columns 12-20 on a matrix, enter after the "@COMMAND:", "shift 12". Column 12 will be the leftmost column. If the user wants to edit rows 13-24, the "list" command is used. Enter after the "@COMMAND:", "list 13". Row 13 will be the top row displayed. After all corrections for the matrix have been made, enter after the "@COMMAND:", "end". This will end the matrix editor and will proceed to the next matrix. A brief explanation of the editor commands may be reviewed during execution of the editor by entering "help" after the "@COMMAND:" prompt.

2.2.4.2 Altering Matrix Data

Saturated thickness will be used in describing the matrix editor.

```
IS THE SATURATED THICKNESS FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE SATURATED THICKNESS
FOR THE AREA IS CONSTANT) (Y/N):  n
```

The matrix editor will be invoked by the above response (not constant).

```
ENTER THE SATURATED THICKNESS MULTIPLIER:  1.0
WHAT DO YOU WISH THE ENTIRE SATURATED THICKNESS
MATRIX INITIALLY SET TO:  50
```

The matrix is initialized to a common value before editing begins.

After initialization, the matrix is displayed.

```
                                          C O L U M N S
ROWS   1    2    3    4    5    6    7    8    9   10   11   12
* 1   50   50   50   50   50   50   50   50   50   50   50   50
* 2   50   50   50   50   50   50   50   50   50   50   50   50
* 3   50   50   50   50   50   50   50   50   50   50   50   50
* 4   50   50   50   50   50   50   50   50   50   50   50   50
* 5   50   50   50   50   50   50   50   50   50   50   50   50
* 6   50   50   50   50   50   50   50   50   50   50   50   50
* 7   50   50   50   50   50   50   50   50   50   50   50   50
* 8   50   50   50   50   50   50   50   50   50   50   50   50
* 9   50   50   50   50   50   50   50   50   50   50   50   50
*10   50   50   50   50   50   50   50   50   50   50   50   50
*11   50   50   50   50   50   50   50   50   50   50   50   50
*12   50   50   50   50   50   50   50   50   50   50   50   50

REMEMBER TO HIT "ENTER" AFTER YOU CHANGE EACH LINE.
COMMANDS ARE:  SHIFT,LIST,HELP,END
@COMMAND:
```

To change values in any row, all nodes displayed for the row that is to be changed must be entered. For example, to change row 1 from 50's to 0's (as required by the model), type:

```
* 1 0 0 0 0 0 0 0 0 0 0 0 0
```

then press the "enter" or "return" key. To change the first and twelfth nodes in row 5 to 0's, type:

```
* 5 0 50 50 50 50 50 50 50 50 50 50 0
```

then press "enter". To view these changes, enter "list 1". The matrix is then displayed as:

```
                                              C O L U M N S
ROWS   1    2    3    4    5    6    7    8    9   10   11   12
 * 1    0    0    0    0    0    0    0    0    0    0    0    0
 * 2   50   50   50   50   50   50   50   50   50   50   50   50
 * 3   50   50   50   50   50   50   50   50   50   50   50   50
 * 4   50   50   50   50   50   50   50   50   50   50   50   50
 * 5    0   50   50   50   50   50   50   50   50   50   50    0
 * 6   50   50   50   50   50   50   50   50   50   50   50   50
 * 7   50   50   50   50   50   50   50   50   50   50   50   50
 * 8   50   50   50   50   50   50   50   50   50   50   50   50
 * 9   50   50   50   50   50   50   50   50   50   50   50   50
 *10   50   50   50   50   50   50   50   50   50   50   50   50
 *11   50   50   50   50   50   50   50   50   50   50   50   50
 *12   50   50   50   50   50   50   50   50   50   50   50   50

REMEMBER TO HIT "ENTER" AFTER YOU CHANGE EACH LINE.
COMMANDS ARE:  SHIFT,LIST,HELP,END
@COMMAND:
```

When all changes to the matrice are completed, enter "end". The program will then proceed to the next matrix prompt.

2.2.5 Matrices

The following are prompts for the matrix variables. In this case, transmissivity is to be entered. The prompts are:

```
IS THE TRANSMISSIVITY FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE TRANSMISSIVITY
FOR THE AREA IS CONSTANT) (Y/N):  y

ENTER THE TRANSMISSIVITY FOR THE AREA (FT**2/SEC).
NOTE:  FT**2/SEC = GPD/FT * 1.54723 E-6
MAXIMUM LENGTH OF 10, REAL NUMBER:  0.1447
```

If hydraulic conductivity were to be entered, the prompts would be:

```
IS THE PERMEABILITY FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE PERMEABILITY
FOR THE AREA IS CONSTANT) (Y/N):

ENTER THE PERMEABILITY FOR THE AREA (FT/SEC).
NOTE:  FT/SEC = GPD/FT**2 * 1.54723 E-6
MAXIMUM LENGTH OF 10, REAL NUMBER:
```

The prompts that follow are:

```
IS THE SATURATED THICKNESS FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE SATURATED THICKNESS
FOR THE AREA IS CONSTANT) (Y/N):  n
```

```
ENTER THE SATURATED THICKNESS MULTIPLIER.
MAXIMUM LENGTH OF 10, REAL NUMBER:  1.0

WHAT DO YOU WISH THE ENTIRE SATURATED THICKNESS
MATRIX INITIALLY SET TO?
(MAXIMUM LENGTH OF 3):  25
```

After this prompt, the saturated thickness is displayed and edited as illustrated in section 2.2.4.

If the bottom elevation were to be entered, the prompts would be similar to those for the saturated thickness.

```
IS THE POTENTIOMETRIC HEAD FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE POTENTIOMETRIC HEAD
FOR THE AREA IS CONSTANT) (Y/N):  n

ENTER THE POTENTIOMETRIC HEAD MULTIPLIER.
MAXIMUM LENGTH OF 10, REAL NUMBER:  1.0

WHAT DO YOU WISH THE ENTIRE POTENTIOMETRIC HEAD
MATRIX INITIALLY SET TO?
(MAXIMUM LENGTH OF 4):  0
```

After this prompt, the potentiometric head matrix is displayed and edited. See section 2.2.4 for example of matrix editor.

```
IS THE RECHARGE FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE RECHARGE
FOR THE AREA IS CONSTANT) (Y/N):  y

ENTER THE RECHARGE FOR THE AREA (FT/SEC).
NEGATIVE NUMBER; INCLUDES E-T.
NOTE:  FT/SEC = IN/YR * 26.7918 E-10
MAXIMUM LENGTH OF 10, REAL NUMBER:  0.0

IS THE NODE IDENTIFICATION FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED OF THE NODE IDENTIFICATION
FOR THE AREA IS CONSTANT) (Y/N):  n

ENTER THE NODE IDENTIFICATION MULTIPLIER.
MAXIMUM LENGTH OF 10, REAL NUMBER:  1.0

WHAT DO YOU WISH THE ENTIRE NODE IDENTIFICATION
MATRIX INITIALLY SET TO, BETWEEN 0 & 9?
(MAXIMUM LENGTH OF 1):  0
```

After this prompt, the node identification matrix is displayed and edited. See section 2.2.4 for example of matrix editor.

```
IS THE CONCENTRATION FOR THE AREA CONSTANT?
(A MATRIX IS NOT REQUIRED IF THE CONCENTRATION
FOR THE AREA IS CONSTANT) (Y/N):  y

ENTER THE CONCENTRATION FOR THE AREA (MG/L).
MAXIMUM LENGTH OF 10, REAL NUMBER:  0.0
```

This is the last prompt. The program then automatically returns to the CLIST (or controlling program).

```
FILE CREATED:  BABKON.CNTL

CHOOSE ACTION:
     1)  CREATE NEW DATA
     2)  MODIFY EXISTING DATA
     3)  END PROGRAM
(ENTER CORRESPONDING NUMBER):
```

The file is now ready for execution and may be submitted as a batch job. Any necessary changes to the data set (BABKON.CNTL) can be made by using any edit feature available on the computer being used or Option 2 of the controlling program (described in section 2.3). The data set created in this example is shown in Appendix V.

2.3 Editor

Option 2 on the menu in section 2.2 (immediately above) is used to modify an existing data set for use with the modified N.R.C. version of the U.S.G.S. Solute Transport Model (Kent, et al, 1986). Examples of some of the prompts for this modification routine follow.

2.3.1 Job Control Language

The JCL is displayed and edited as described in Section 2.2.1 beginning on page 2-4 for an IBM 3081D, in Appendix IX for an IBM-PC (or similar micro-computer), or in Appendix X for a DEC/VAX. The "DISP" parameter for both the outlist and graph data sets should be changed from "DISP=(MOD,CATLG)" to "DISP=OLD" if the data set names are not changed after the first batch run. This will replace the old output with the new on each subsequent batch run.

2.3.2 Individual Variables

Variables other than matrices are edited first. If any of these individual variables need to be changed, enter "y" to the following prompt:

```
DO YOU WISH TO CHANGE ANY OF THE SINGLE VARIABLES?
ANYTHING OTHER THAN MATRICES (Y/N):
```

otherwise, enter "n" and the program continues with the matrix data.

For single variables (eg. TITLE, NX, NY, POROS), the variable name and its value is displayed along with a prompt asking whether the value is to be changed. If a change is desired, a prompt asking for the new value is displayed. If no change is desired, the next variable is displayed.

Here is an example changing NPMAX and not changing NPTPND.

```
NPMAX = 1000
MAXIMUM OF 3200.
CHANGE (Y/N):  y

ENTER NEW VALUE:  3200

NPTPND = 4
OPTIONS = 4,5,8,9:
CHANGE (Y/N):  n
```

2.3.2.1 Location Variables

Three groups of variables, indicating nodes or wells by coordinates, are displayed in tables. These variables are:

1. The coordinates for the individual observation points,
2. The ICODE's and corresponding FCTR's,
3. The coordinates, rates, etc. for individual pumping points.

These variables and the associated counters for them are modified as follows, using the observation points as an example.

```
NUMOBS = 2
MAXIMUM OF 5.
CHANGE (Y/N):
```

Suppose another observation point is desired, enter "y", the following prompt appears and "3" is entered as the new value to NUMOBS.

```
ENTER NEW VALUE:  3
```

The coordinates for the new observation point are requested next.

```
ENTER THE "X" COORDINATE OF OBSERVATION POINT 3.
VARIABLE "IXOBS(3)":  5

ENTER THE "Y" COORDINATE OF OBSERVATION POINT 3.
VARIABLE "IYOBS(3)":  8
```

All of the observation points are now displayed. The new point is designated by "NEW" on the line preceeding its coordinates, as shown below.

```
WELL#      X      Y
  1        8      8
  2        4      3
 NEW
  3        5      8
ENTER WELL NUMBER (OR ZERO TO CONTINUE):
```

Now that all of the observation points are displayed, suppose well 1 should be moved to (8,7). Enter the well number "1"; the values are displayed and may be changed as follows.

```
IXOBS(1) = 8
CHANGE (Y/N):  n

IYOBS(1) = 8
CHANGE (Y/N):  y

ENTER NEW VALUE:  7
```

The wells are displayed again. To continue to the next variable, 0 (zero) is entered.

```
WELL#      X      Y
  1        8      7
  2        4      3
 NEW
  3        5      8
ENTER WELL NUMBER (OR 0 TO CONTINUE):  0
```

NCODES and NREC are handled similarly. The table format for NCODES is:

```
ICODE#      ICODE      FCTR1      FCTR2      FCTR3      OVERRD
```

and the table format for NREC is:

```
WELL#     X     Y     REC     CNRECH
```

2.3.3 Matrices

The following prompt begins the editing of matrix data of the program.

```
DO YOU WISH TO CHANGE ANY OF THE MATRIX INPUT (Y/N):
```

If any matrix data, including multipliers, needs to be altered, enter "y" to the above prompt. Entering "n" will skip all the matrix data and end the editor program.

It should be noted that there are no checks against possible errors if the following flags were changed in the previous section, TP, FCON, and BTM.

The matrices are handled in the following manner. Suppose the Saturated Thickness is a constant of 50 ft., then the following prompt appears:

```
THE SATURATED THICKNESS FOR THE AREA IS CONSTANT.
CHANGE TO MATRIX (Y/N):
```

To keep it a constant, enter "n". The thickness is then displayed and changing the value or leaving it as uses the same format as single variables. To change the saturated thickness from a constant to a matrix, enter "y". The following prompts then appear:

```
ENTER THE SATURATED THICKNESS MULTIPLIER.
MAXIMUM LENGTH OF 10, REAL NUMBER:  0.1

WHAT DO YOU WISH THE ENTIRE SATURATED THICKNESSS
MATRIX INITIALLY SET TO?
(MAXIMUM LENGTH OF 3):  500
```

The responses set the multiplier to 0.1 and initializes the matrix to a common value of 500 before the matrix editor is invoked. The matrix editor is described in Section 2.2.4. After the editor is ended, prompting continues with the next matrix.

Suppose the NODEID is a matrix, then the following appears on the screen.

```
THE NODEID FOR THE AREA IS A MATRIX.
CHANGE TO CONSTANT (Y/N):
```

If the matrix is to be changed to a constant, enter "y"; the next prompt asks for the value as shown below. In this instance the matrix is being changed to a constant value of 0 (zero).

```
ENTER THE NODEID FOR THE AREA.
BETWEEN 0 & 9, MAXIMUM LENGTH OF 1:  0
```

Prompting now continues with the next matrix. If the matrix is to be kept (response to the initial NODEID prompt is "n"), the multiplier is displayed with the normal option to change as below:

```
NODEID MULTIPLIER = 1
CHANGE (Y/N):  n

DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):
```

With a response of "y", the matrix editor is invoked.

When the modify program is completed, the message,

```
FILE MODIFIED:  filename
```

is displayed along with the controlling menu.

2.4 Exit Preprocessor

This option terminates the program, returning to operating system.

2.5 Error Checking

The preprocessor and editor do not perform any significant error detection; this is done in the Solute Transport Model. The checking of the data for the initial pumping period is performed as the data is read by the model (in subroutine PARLOD). Any warning or error messages are issued from PARLOD and the model run is stopped if any significant errors are detected. It is suggested that a time limit of five (5) seconds be used for the first model run to facilitate a quick check of data.

It is recommended that an analytical model be employed prior to using the numerical model. This will provide an opportunity to perform simple sensitivity analyses on various hydrogeological parameters. In this way, a conceptual model is systematically quantitized using reasonable parametric values.

3.0 INTERACTIVE PREPROCESSOR DESCRIPTION

Interactive capabilities to the modified N.R.C. version of the U.S.G.S. Solute Transport Model (Kent, et al, 1986) were developed to aid users in creating the input data set. This program serves as an interactive input and modification routine for the input data necessary to execute the modified model. A controlling program has also been written to incorporate the input and modification routines into one program.

The interactive program consists of two routines; a preprocessor and an editor. The preprocessor creates a data set that contains the input to the modified N.R.C. version of the U.S.G.S. Solute Transport Model. The editor is used to modify data sets created by the preprocessor. Both routines are initiated by the controlling program KONI. The editor and preprocessor, together, contain approximately 3600 lines of PL/1 code. Nearly 800 lines of this code comprise subroutines used by both programs. The source code for all routines is listed in Appendix I. These programs were developed and tested on an IBM 3081D computer and on the Kaypro-2 and IBM-PC microcomputers using PC-DOS and CPM operating systems.

3.1 Technical Information

The preprocessor is composed of 31 routines; of these, 13 are utility routines. The name and primary purpose of each routine are listed in the following tables. Table 1 lists the routines unique to the preprocessor, Table 2 lists the routines unique to the editor, and Table 3 lists the utility routines used by both programs. Sections 3.2 through 3.4 provide detailed descriptions of each of the routines listed in Tables 1, 2, and 3.

The variable names used in both the preprocessor and editor correspond to the names used in the model. The definitions of selected variables for

Table 1. Subroutines Unique to Interactive Preprocessor

Name	Purpose
CREATE	Controls data entry for IBM 3081.
CREATEM	Controls data entry for microcomputers.
CREATED	Controls data entry for DEC/VAX.
GTJCL	Creates job control information for IBM 3081.
GTJCLM	Creates JCL information for microcomputers.
GTJCLD	Creates job control information for DEC/VAX.
GTVAR	Input of individual variables.
GTMTRX	Input of matrix data.

Table 2. Subroutines Unique to Interactive Editor

Name	Purpose
UPDATE	Controls data editing for IBM 3081.
UPDATEM	Controls data editing for microcomputers.
UPDATED	Controls data editing for DEC/VAX.
EDFILE	Reads data from input data set (for IBM 3081).
EDFILEM	Reads data from input data set (for others).
EDJCL	Modify job control information for IBM 3081.
EDJCLM	Modify JCL information for microcomputers.
EDJCLD	Modify job control information for DEC/VAX.
EDVAR	Modify individual variables.
EDMTRX	Modify matrix data.

Table 3. Utility Subroutines

Name	Purpose
DATATP	Determines data characteristics of a response for ASCII machines.
EBCDIC	Determines data characteristics of a response for EBCDIC machines.
DBLANK	Removes blanks from front and back of a string.
INPUT	Reads unbounded data from screen.
INPUTR	Reads bounded data from screen.
MTRXED	Interactive matrix editor.
SUBFIL	Writes data to input data set for IBM 3081.
SUBFILM	Writes data to input data set for other machines.
EXTVAR	Contains all external variable declarations.
PARMGT	Displays definition of each variable then reads response.
KONI	Controls execution for IBM 3081.
KONIM	Controls execution for microcomputers.
KONID	Controls execution for DEC/VAX.

the interactive program are listed in Appendix II. All major variables are character data.

Array dimensions are set using the %REPLACE command which is described in Section 3.5. The dimensions are limited by the amount of random access memory (RAM) available with the system in use. For a machine with 64K RAM, the largest dimensions are: matrices, 10X10; pumping periods, 10; number of injection/discharge wells, 10; and number of observation wells, 10. Larger RAM will, of course, allow for larger dimensions.

3.1.1 Program Flow of Control

A flow chart for the program KONI is provided in Figure 1. "A" and "B" within the flow chart represent the flow charts found in Figure 2 for the preprocessor and editor.

3.2 Preprocessor

3.2.1 CREATE

The main purpose of the CREATE routine is to control the overall execution of the preprocessor. All variables used in the modified N.R.C. version of the U.S.G.S. Solute Transport Model are declared as character variables. Other variables relate to terminal input and output and the data set to be created. All global variables are declared as external in the file EXTVAR. The version of this routine that controls the execution of the preprocessor when creating data to be executed on a micro-computer is called CREATEM.

3.2.2 GTJCL

This routine, invoked by the CREATE routine, creates the job control language (JCL) necessary to execute the modified N.R.C. version of the

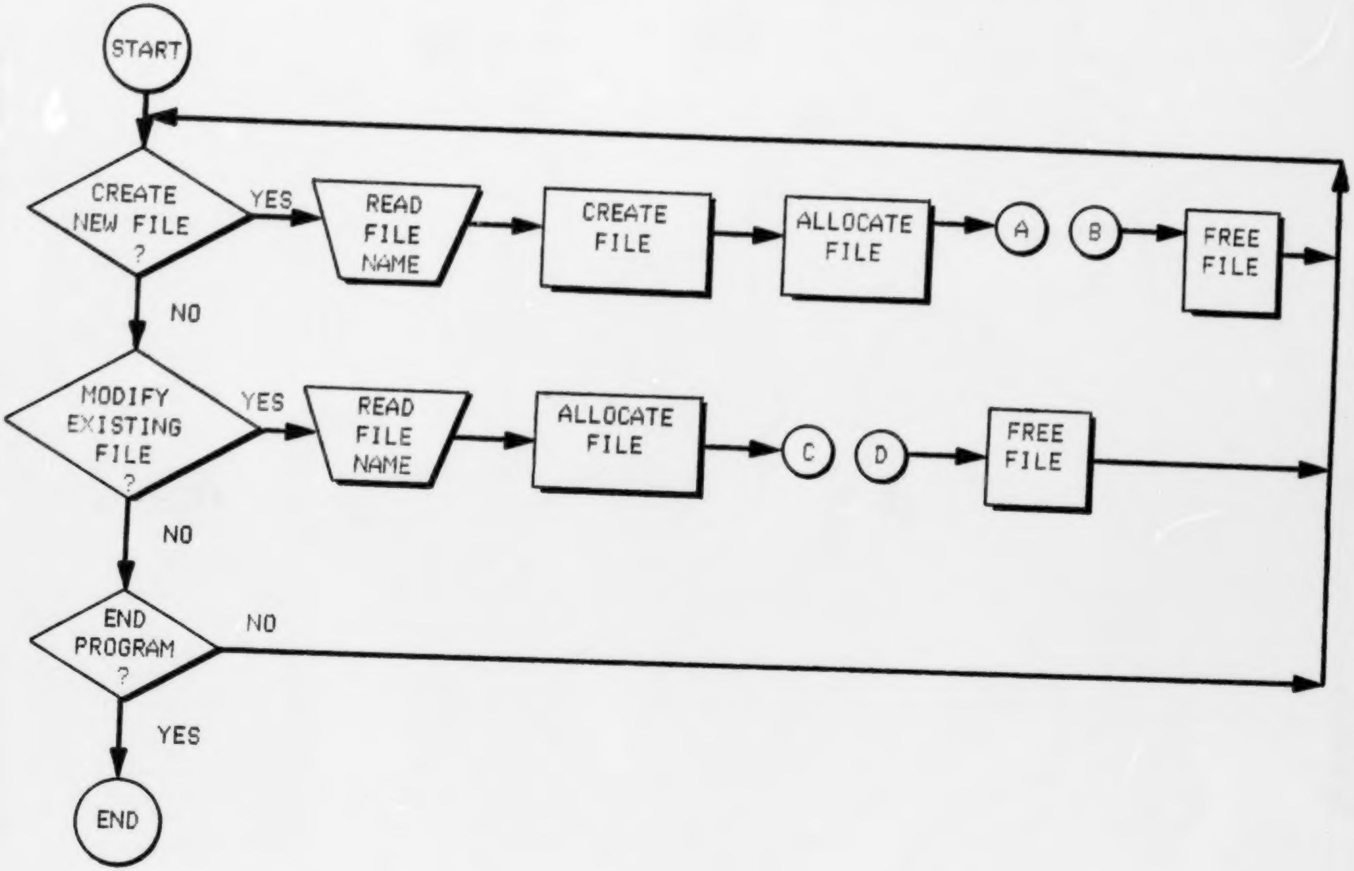

Figure 1. Simplified Flow Chart For The Controlling Program

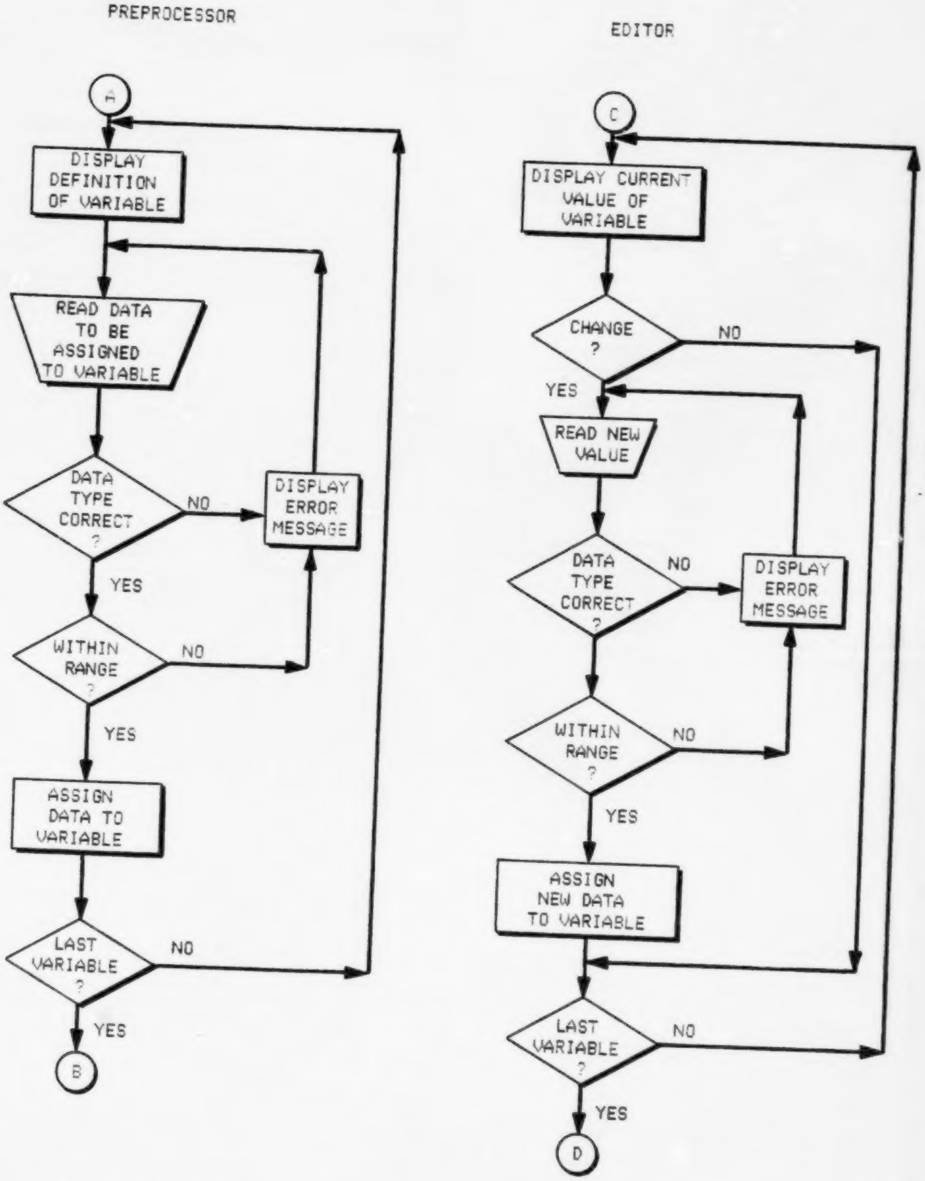

Figure 2. Simplified Flow Charts For The Preprocessor and Editor

U.S.G.S. Solute Transport Model on an IBM 3081D computer. This routine may need to be modified for other computer systems. A version of this routine that generates the JCL needed to execute the model on a microcomputer with the MS-DOS operating system is described in Appendix IX and is called GTJCLM. Appendix X describes the JCL needed for a DEC/VAX (routine name is GTJCLD).

The JCL that is provided by the user includes the jobname, time limit for execution, output window (or room), output data set name and graphics data set name. The jobname, a code containing up to eight alphanumeric characters and beginning with an alphabetic character, is used as an identifier by the computer during execution. The amount of time necessary for execution depends on the size and complexity of the system being modeled. When running only a head simulation, 40 seconds should be ample time. A full transport run of the model can take at least seven times longer than a head only run. The output window, or room, is unique to the system used at Oklahoma State University. This parameter specifies the destination of the output for ease of separation by the system operators. The output and graphics file names should be complete file names, such as U99999A.EXAMPLE1.OUTLIST and U99999A.EXAMPLE1.GRAPH. The dataset attributes are set in the code for the GTJCL routine but may be changed either in the source or when running the preprocessor. The name and location of the compiled version of the modified N.R.C. version of the U.S.G.S. Solute Transport Model is also included as part of the source code of this routine. In this case, the executable code is in the partitioned data set (PDS) U11236C.KONI.LOAD. A PDS is actually a directory to several data sets, called members, each having a unique name and each being individually accessible. The member name of this PDS that is the executable version of the modified N.R.C. version of the U.S.G.S. Solute Transport Model is KONIKOW. The REGION parameter on line 5600 indicates the amount of core memory necessary to execute the model. This may need to be increased if the dimensions of the matrices are increased.

Utility routines called by GTJCL are INPUT, and INPUTR. These are described in Section 3.4.3. The builtin subroutine SUBSTR is also used.

3.2.3 GTVAR

This routine handles the input of the individual variable data. The only data that is not handled by these routines are the matrix data; this includes the matrix multipliers and the matrix/constant flags which are controlled by the GTMTRX routine described in Section 3.2.4. GTVAR handles all input of the individual variable data. GTVAR may need to be divided into two routines to facilitate compilation on a 64K RAM microcomputer.

The GTVAR routine is very straightforward. A brief definition of each variable is displayed along with the variable name and any limits or recommended values. Variables that are real (may contain a decimal point), are explicitly indicated along with the maximum length of the number. All real numbers may be entered in the scientific notation, if desired. The real number must contain a decimal point and the exponent must be an integer.

The order of input for the variables follows closely the order in Appendix III except as indicated below for GTVAR. If NUMOBS is set to be greater than zero, the X and Y coordinates for each observation point are requested immediately after NUMOBS is initialized. NCODES and the corresponding variables ICODE, FCTR1, FCTR1, OVERRD, and FCTR3 are input in a similar fashion, as are IX, IY, REC, and CNRECH, the variables corresponding to NREC. Similarly, if more than one pumping period is to be simulated, all variables specific to each pumping period are input; those being the variables indicated for data set 10 in Appendix III, page V-8.

No utility routines are called by GTVAR. A routine available only to GTVAR is called. This subroutine is called PARMGT. PARMGT displays the description for each variable then calls INPUT or INPUTR) to read and decode the response. If the response is numeric, the length of the response is checked; if it is shorter than it should be, the value is right justified by forcing blanks into the left end of the field. This is done so that the values are written properly to the data set being created. If the data is too long to fit in the field specified, a message indicating the maximum length of the number is written to the screen along with a request for the corrected data to be entered. The length of a response is not checked if it is not numeric.

After the response has been accepted and if the VERIFY option was set in GTVAR, the verification request is displayed. The data is accepted if the response to the verification request is YES. Otherwise, the data is to be reentered. Once the data is accepted, it is returned by PARMGT.

3.2.4 GTMTRX

This routine, invoked by the CREATE routine, controls the input of the matrix data. This is a straightforward routine that requests the matrix data in the order indicated in Appendix III. The utility routine called is MTRXED. MTRXED, the matrix editor, is invoked only when a matrix is to be entered. This routine is described in section 3.4.4. The local subroutine, PARMGT, functions just as the PARMGT described in section 3.2.3. PARMGT is local to each routine because it uses and reassigns variables declared locally in GTVAR and GTMTRX and, therefore, must have direct access to these variables.

3.3 Editor

3.3.1 UPDATE

The main purpose of the UPDATE routine is to control the overall execution of the modification routine. All variables used in the modified N.R.C. version of the U.S.G.S. Solute Transport Model are declared as character variables. Other variables relate to terminal input and output and the data set to be created. All global variabales are declared as external in the file EXTVAR. The version of this routine that controlls the editing of data that is being simulated on a micro-computer is called UPDATEM.

3.3.2 EDFILE

This routine, invoked by the UPDATE routine, reads the data off the input data file specified. All data is read as character data and placed in the variables defined in UPDATE. The utility routine DBLANK is called to determine if NREC, NCODES or NUMOBS are greater than zero or if NPMP>1.

The version of this routine that reads the data files created for simulation on a micro-computer is called EDFILEM.

3.3.3 EDJCL

Called by the UPDATE routine, EDJCL displays the current JCL for the modified N.R.C. version of the U.S.G.S. Solute Transport Model and allows modifications to be made. After the first execution on the IBM 3081D, using a particular input data set, it is recommended that one of two items are changed. Either the DISP parameters for both output files should be changed from "(MOD,CATLG)" to "OLD" or the output data set names should be changed (or the files deleted) so that the files do not exist. If neither of these changes are made, the model will run but the output will be catonated to the end of the output from the previous model run. Appendix IX and Appendix X describe the editing of JCL for the MS-DOS operating system (routine name EDJCLM) and a DEC/VAX (routine name EDJCLD).

Utility routines called by EDJCL are INPUT and INPUTR. These routines are described in Section 3.4.3.

3.3.4 EDVAR

The routine EDVAR, initiated by UPDATE, displays the current values for the individual variable data. Variable names and their current values are displayed in the same order as they are input in the preprocessor. Each value may be changed after it has been displayed. The variables related to NUMOBS, NCODES, and NREC are each displayed in tables immediately after the related variable indicated above. No utility routines are called by EDVAR. A local routine, PARMGT, is called and is described in section 3.2.3.

3.3.5 EDMTRX

This routine, invoked by the UPDATE routine, controls the modification of the matrix data. The matrix data is displayed in the order indicated in Appendix III. Data that is in matrix form may be changed to a constant and vice versa, or the form may stay the same (matrix or constant) and the values may be changed. The utility routines used by EDMTRX is MTRXED (described in 3.4.4). The local routine, PARMGT, functions as described in section 3.2.3.

3.4 Utility Routines

3.4.1 DATATP

This utility routine determines the data characteristic of the string received in STRING and returns it in TYPE. Two key local variables are a two-dimensional array called FSA and a translation string, TRANSSTR, which is used with the builtin function TRANSLATE. Each character in STRING is mapped to the corresponding character in TRANSSTR. This mapping indicates the column in FSA to be used in determining the data type of string. The entries in FSA indicate the next level (row) to use. The process always begins with level one. Each column in FSA represents a specific character or characters. Each level (row) represents a "state" in the Finite State Automaton (FSA). A "state" is a degree of acceptance of a string that is being examined one character at a time. The 128 possible hexadecimal values in ASCII code are considered "character" except for the following which represent special characters to be recognized and are represented by specific columns of FSA: "0-9" are column 2, "." is column 3, "+" and "-" are column 4, "Y" is column 5, "E" is column 6, "S" is column 7, "N" is column 8, and "O" is column 9. The levels are defined as: "character" is 1,4,7,8,10,99; "real" is 3,5,6; "integer" is 2; and "answer" is 9,11,12,13. DATATP is called by MTRXED and INPUT. A second reoutine for use with machines that code in EBCDIC is provided.

3.4.2 DBLANK

This routine removes blank characters from the front and back of the character string received in the variable, LINE. DBLANK is a function subroutine that returns the modified string found in OUT_LINE. LINE is assigned to OUT_LINE and all manipulations are performed in OUT_LINE. Any lower case alphabetic characters are also converted to upper case using the builtin function TRANSLATE.

Routines that use this function are EDFILE, INPUT, MTRXED (including PEAL and WRTSCRN), and SUBFIL.

3.4.3 INPUT and INPUTR

The INPUT routine reads information from the screen and determines if it is the type of response specified. Two variables are passed to and from INPUT. INPUTR receives four variables - the two received by INPUT and the upper and lower bounds for the data being input. INPUT calls INPUTR, passing the two variables it receives along with special values that indicate there is no limit on the data being read. INFO_TYPE contains the data type required of the response. The data read from the screen is placed in IN_LINE to be analyzed and saved if it is the correct type. The INFO_TYPE may be character, real integer, or answer. The string in IN_LINE is analyzed in DATATP, with the characteristics being returned in TEMP_TYPE. If TEMP_TYPE does not correspond to INFO_TYPE, then an error message is written and the user must respond with new data. This continues until the data is accepted or until EXIT is entered, which stops the program.

In the mainframe version of the preprocessor, INPUTR is an external entry point in the subroutine INPUT. PL/I-80 does not allow entry points in subroutines; therefore, it was necessary to form two subroutines from the original subroutine, INPUT, and its entry point, INPUTR.

INPUT AND INPUTR call DBLANK and DATATP. INPUT and INPUTR are called by GTJCL, PARMGT (local to several routines), EDJCL, and MTRXED.

3.4.4 MTRXED

This routine is the interactive matrix editor called by GTMTRX and EDMTRX. The matrix editor is a line oriented editor. A maximum of twelve rows are displayed at a time. The number of columns depends on the field size of the matrix elements; the terminal is assumed to have an 80 column display. If the matrix is too large to be displayed at one time, the SHIFT and LIST commands may be used. These commands are described in section 2.2.4.1.

MTRXED calls the utility routines DBLANK, DATATP, INPUT and INPUTR. Two local routines are also called, PEAL and WRTSCRN. PEAL receives a string and returns the first nonblank character or characters of the string. This substring is then removed from the front of the string received and that new string is also returned. PEAL uses the utility routine DBLANK and the builtin routines INDEX and SUBSTR.

WRTSCRN writes the matrix to the screen along with the command line. No routines are called by WRTSCRN.

3.4.5 SUBFIL

This routine writes the data for the modified N.R.C. version of the U.S.G.S Solute Transport Model to the data file specified. All data is written as character data with the length specified in Appendix III. SUBFIL calls the utility routine DBLANK. SUBFIL is called by CREATE and UPDATE. A version that writes data to be executed on a micro-computer is provided under the name of SUBFILM.

3.5 Compilation and Linking

The routines described in sections 3.2 through 3.4 were compiled using Digital Research's PL/1-80 compiler and were linked using the LINK-80 linkage editor, also by Digital Research.

All external routines are compiled separately using PL/1-80. These routines are:

KONI (the controlling program),
CREATE, GTVAR, GTMTRX, UPDATE, EDVAR, EDMTRX, DATATYP,
DBLANK, INPUT, INPUTR, MTRXED, and SUBFIL.

GTJCL is compiled with CREATE by using the %INCLUDE statement. EDFILE and EDJCL are compiled with UPDATE in a similar fashion.

A file, EXTVAR, containing the external declarations of all global variables is included, using %INCLUDE, in several files. These files are: CREATE, GTVAR, GTMTRX, UPDATE, EDVAR, EDMTRX, INPUTR, MTRXED, and SUBFIL. EXTVAR also has a %REPLACE command used to more easily modify the dimensions of the different arrays. The variables used by %REPLACE are defined in Appendix II.

To maximize memory, a method of overlays is used for the linking step. The overlay levels are shown in Figure 3. This overlay method will keep KONI and the utility routines in memory at all times. The root may be accessed by any other levels in the overlay tree. Only one member of each level (other than the root) may be in memory at one time.

The maximum value for each of the variables in the %REPLACE command is 10 for a microcomputer with 64K bytes of random access memory (RAM) (i.e. standard Kaypro-2). Machines with more RAM (i.e. IBM-PC with 512K RAM) will be able to handle larger dimensions (eg. 20 x 20).

```
                 KONI_and_all_utility_routines
                              |
             -----------------|-----------------
             |                                 |
           CREATE                            UPDATE
             |                                 |
       ------|------                     ------|------
       |           |                     |           |
     GTVAR       GTMTRX                EDVAR       EDMTRX
```

Compilation in 64K RAM

```
                  KONI_and_all_utility_routines
                               |
       ------------------------|------------------------
       |                                               |
CREATE, GTVAR, GTMTRX                         UPDATE, EDVAR, EDMTRX
```

Compilation in 512K RAM

Figure 3. Overlay Levels for Preprocessor Compilation in 64K RAM and 512K RAM.

4.0 MODEL PERFORMANCE

To demonstrate and compare the performance of the modified N.R.C. version of the U.S.G.S. Solute Transport Model (SIP option) with the original model (ADIP option) several example problems were run using data on the Babylon Landfill site at Long Island, New York. For more information on this site, see the thesis by Chang (1985). An error criteria of 0.01 was used in both SIP and ADIP runs for the test problems. Other values can be used to reflect the accuracy of the field data. Larger values (eg. 0.1) can be used to reduce the number of iterations which results in lower computer costs.

The SIP algorithm requires approximately the same number of iterations as the ADIP algorithm to converge to the desired solutions for the Babylon Landfill problem. The detailed discussion on the performance of the model for the cases of steady state and transient flow simulations are described in the following sections.

4.1 Test Problems

To demonstrate the capability of the modified N.R.C. version of the U.S.G.S. Solute Transport Model in simulating contaminant transport in a water-table aquifer, the Babylon Landfill site of Long Island, New York is considered as the base test problem. The Babylon Landfill contamination plume started after the landfill began operation in late 1944 or early 1945 (Kimmel and Braid, 1980). The thickness of the aquifer varies from 71 to 79 feet. The flow field is introduced in several forms as described in the following sections and is controlled by constant head boundaries around the perimeter of the modeled area. To control the constant head boundaries, ICODE 2 is used in the NODEID matrix (see Figure 4). This problem was

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 4 - Nodeid Matrix (Injection source)

For Test Problem 2

	NODEID CODES
ICODE#	**1**
ICODE	**2**
FCTR1	**0**
FCTR2	**0**
FCTR3	**0**
OVERRD	**0**

designed to demonstrate several options in terms of contaminant sources and pumping periods.

All test problems were run for both steady state and transient flow (three equal time steps) simulations. The CPU time and number of iterations for SIP and ADIP as well as the mass balance error resulting from each test problem are presented in Table 4 for steady state and Table 5 for transient flow. Input data and the selected output for some of the runs are presented in Appendix IV. The test problems represented are described briefly in the following sections.

4.1.1 Test Problem 1 (Patch Source)

This option uses the patch source form of representing contamination. The patch source nodes have different concentrations and are controlled by different ICODEs as shown in the NODEID matrix (see Figure 5). The flow field is influenced by four withdrawal wells. Three equal time steps were used for the transient case of this problem.

4.1.2 Test Problem 2 (Injection Source)

This option uses injection wells as the source of contamination. The flow field is influenced by four withdrawal wells and four injection wells. The NODEID matrix is shown in Figure 4. Similar to the patch source, three equal time steps were used during the simulation period of a transient run of this problem.

4.1.3 Test Problem 3 (Multiple Pumping Periods)

The test problems and options discussed so far, were run for a single pumping period during simulation time. This example is the same as test problem 2 except that it uses three equal pumping periods with respect to

Table 4. - Computational Efficiency For Steady-State Problems

	Iterations and CPU Time				Mass Balance Error (%)			
	SIP		ADIP		SIP		ADIP	
Test Problem	No. of Itera- tions	Total CPU Time (sec)	No. of Itera- tions	Total CPU Time (sec)	Hydraulic Mass balance error	Chemical Mass balance error	Hydraulic Mass balance error	Chemical Mass balance error
1	7	32.85	6	32.83	3.8871E-04	1.38000E+00	2.1256E-01	1.40000E+00
2	7	33.22	6	34.11	-1.6699E-03	1.34300E+01	-1.1341E-02	1.37700E+01
3 I	7	35.49	6	36.05	-1.68893E-03	-4.32622E+00	-1.4775E-02	-4.32358E+00
3 II	6		6		-1.52420E-03	-7.23842E+00	-5.22687E-03	-6.84206E+00
3 III	6		6		-1.52521E-03	02.00671E+00	-3.65350E-03	-6.71631E-01

Table 5. - Computational Efficiency For Transient Test Problems

			Iterations and CPU Time				Mass Balance Error (%)			
			SIP		ADIP		SIP		ADIP	
Test Problem	Pumping Period	Time Step	No. of Itera-tions	Total CPU Time (sec)	No. of Itera-tions	Total CPU Time (sec)	Hydraulic mass balance error	Chemical Mass balance error	Hydraulic Mass balance error	Chemical Mass balance error
1	1	1	7	34.23	6	34.09	8.59789E-03	2.50945E+01	2.09780E-01	1.53088E+01
		2	4		4		6.93298E-03	1.55487E+01	9.82131E-02	1.55901E+01
		3	1		1		1.64329E-03	1.46221E+01	6.69793E-02	1.46713E+01
2	1	1	7	36.00	6	35.48	-1.93815E-05	-6.13269E+00	-1.13171E-02	-6.30910E+00
		2	4		4		-1.45319E-03	-7.18126E+00	-5.70256E-03	-6.00699E+00
		3	1		1		-5.06498E-04	-6.56025E+00	-5.18300E-03	-5.32190E+00
3 I	1	1	7	38.34	6	38.53	-1.56583E-03	1.02009E+01	-1.11378E-02	1.00250E+01
		2	4		4		1.77254E-03	2.23117E-01	-5.45729E-03	2.20782E-01
		3	1		1		-8.18419E-04	-4.08735E+00	-5.23438E-03	-4.08299E+00
3 II	2	1	6		6		1.25724E-03	-4.06923E+00	-2.65767E-03	-3.93526E+00
3 III	3	1	7		6		9.67450E-04	7.83487E-01	-2.49618E-03	8.67862E-01
		2	4		4		3.86233E-04	3.80142E+00	-3.06180E-03	3.86488E+00
		3	1		1		4.94409E-04	2.03998E+00	-2.62001E-03	2.11740E+00

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2	5																											2	0
0	2	4																											2	0
0	2	1																											2	0
0	2	3																											2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2																												2	0
0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 5 - Nodeid Matrix (Patch Source)
For Test Problem 1

NODEID CODES

ICODE#	1	2	3	4	5
ICODE	2	1	3	4	5
FCTR1	1.	0.0724	0.0724	0.0724	0.0724
FCTR2	0	240	400	350	320
FCTR3	0	0	0	0	0
OVERRD	-	-	-	-	-

withdrawal and injection during the simulation period. These three pumping periods represent a wet season (3I), dry season (3II) and wet season (3III). During the dry season all the pumping wells (withdrawal and injection) had to be explicitly shut off by setting each pumping or recharge rate to 0.0. The wells then had to be specified again for the second wet season. For transient flow simulation, three equal time steps were used during the wet seasons and only one time step was used during the dry season.

5.0 REFERENCES

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APPENDIX I

PL/1 PROGRAM LISTING

APPENDIX I-A

PREPROCESSOR ROUTINES

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                  (CREATE   )
 CREATE: PROC;
 /* CONTROLS DATA ENTRY OPERATIONS. */
 /* SETS UP JCL FOR IBM 3081.       */
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
 %INCLUDE 'B:EXTVAR.PLI';
 /**********************************************/
   DCL SUBFIL                      ENTRY,
       GTVAR                       ENTRY,    /* OVERLAY */
       GTMTRX                      ENTRY;    /* OVERLAY */
   DCL INPUT                       ENTRY(CHAR(4), CHAR(80) VAR);
   OPEN FILE(SCREEN) STREAM OUTPUT TITLE('$CON');
   OPEN FILE(CRT) INPUT TITLE('$CON');
   PUT FILE(SCREEN) EDIT('ENTER THE DATASET NAME TO BE CREATED',
       '(INCLUDE DRIVE IDENTIFIER):')(SKIP(3),A,SKIP,A);
   CALL INPUT('CHAR',FILENM);
   CALL GTJCL;
   CALL GTVAR;
   CALL GTMTRX;
   OPEN FILE(SYSUT4) STREAM OUTPUT TITLE(FILENM) LINESIZE(80);
   CALL SUBFIL;
   PUT FILE(SCREEN) EDIT('FILE CREATED:  ',FILENM)(SKIP,A,A);
/**********************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
%INCLUDE 'B:GTJCL.PLI';
/**********************************************/
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL                                 (CREATEM )

 CREATEM: PROC;
 /* CONTROLS DATA ENTRY OPERATIONS. */
 /* SETS UP JCL FOR MICROCOMPUTER.  */
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.      */
 %INCLUDE 'B:EXTVAR.PLI';
 /**********************************************/
   DCL SUBFILM                   ENTRY,
       GTVAR                     ENTRY,   /* OVERLAY */
       GTMTRX                    ENTRY;   /* OVERLAY */
   DCL INPUT                     ENTRY(CHAR(4), CHAR(80) VAR);
   OPEN FILE(SCREEN) STREAM OUTPUT TITLE('$CON');
   OPEN FILE(CRT) INPUT TITLE('$CON');
   PUT FILE(SCREEN) EDIT('ENTER THE DATASET NAME TO BE CREATED',
       '(INCLUDE DRIVE IDENTIFIER):')(SKIP(3),A,SKIP,A);
   CALL INPUT('CHAR',FILENM);
   CALL GTJCLM;
   CALL GTVAR;
   CALL GTMTRX;
   OPEN FILE(SYSUT4) STREAM OUTPUT TITLE(FILENM) LINESIZE(80);
   CALL SUBFILM;
   PUT FILE(SCREEN) EDIT('FILE CREATED:  ',FILENM)(SKIP,A,A);
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.      */
 %INCLUDE 'B:GTJCLM.PLI';
 /**********************************************/
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                        (CREATED )
 CREATED: PROC;
 /* CONTROLS DATA ENTRY OPERATIONS. */
 /* SETS UP JCL FOR DEC/VAX.        */
 /***********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
 %INCLUDE 'B:EXTVAR.PLI';
 /***********************************************/
   DCL SUBFILM                     ENTRY,
       GTVAR                       ENTRY,   /* OVERLAY */
       GTMTRX                      ENTRY;   /* OVERLAY */
   DCL INPUT                       ENTRY(CHAR(4), CHAR(80) VAR);
   OPEN FILE(SCREEN) STREAM OUTPUT TITLE('$CON');
   OPEN FILE(CRT) INPUT TITLE('$CON');
   PUT FILE(SCREEN) EDIT('ENTER THE DATASET NAME TO BE CREATED:')
                      (SKIP,A);
   CALL INPUT('CHAR',FILENM);
   CALL GTJCLD;
   CALL GTVAR;
   CALL GTMTRX;
   OPEN FILE(SYSUT4) STREAM OUTPUT TITLE(FILENM) LINESIZE(80);
   CALL SUBFILM;
   PUT FILE(SCREEN) EDIT('FILE CREATED:  ',FILENM)(SKIP,A,A);
/***********************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
%INCLUDE 'B:GTJCLD.PLI';
/***********************************************/
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                         (GTJCL    )
 GTJCL: PROC;
 /* THE GTJCL SUBROUTINE IS USED TO PROMPT THE USER FOR
    THE CORRECT JCL TO RUN THE MODEL ON AN IBM 3081.
 */
   DCL ANSWER                          CHAR(80) VAR,
       ANSWER1                         CHAR(80) VAR,
       I                               FIXED BIN;
   DCL INPUT                           ENTRY(CHAR(4), CHAR(80) VAR),
       DBLANK                  ENTRY(CHAR(80) VAR) RETURNS(CHAR(80) VAR),
       DATATP                  ENTRY(CHAR(80) VAR, CHAR(4)),
       INPUTR                  ENTRY(CHAR(4), CHAR(80) VAR, FLOAT, FLOAT);
   DO I=1 TO 16;
     JCL(I) = '//*';
   END;
   PUT FILE(SCREEN) EDIT ('SET UP JCL FOR MODEL')(SKIP,A);
   PUT FILE(SCREEN) EDIT
     ('ENTER THE JOB NAME (MAXIMUM OF 8 CHARACTERS) :')(SKIP,A);
   CALL INPUT('CHAR',ANSWER);
   JCL(1) = '//' || ANSWER || ' JOB (?????,TSO-TR-KONI),KONIKOWRUN,';
   PUT FILE(SCREEN) EDIT(
      'ENTER THE TIME LIMIT FOR THE JOB.',
      '  1)   5 SECONDS OR LESS',
      '  2)  40 SECONDS OR LESS',
      '  3)   5 MINUTES OR LESS',
      '  4)  OVER 5 MINUTES',
      'CHOOSE ONE OF THE ABOVE :') (6(SKIP,A));
   CALL INPUTR('INT',ANSWER,1,4);
   IF ANSWER='1' THEN DO;
     ANSWER = ',5';
     ANSWER1 = 'F,';
   END;
   ELSE IF ANSWER='2' THEN DO;
     ANSWER = '0,40';
     ANSWER1 = 'A,';
   END;
   ELSE IF ANSWER='3' THEN DO;
     ANSWER = '5,0';
     ANSWER1 = 'K,';
   END;
   ELSE IF ANSWER='4' THEN DO;
     PUT FILE(SCREEN) EDIT
       ('ENTER THE UPPER LIMIT FOR TIME (IN MINUTES):') (SKIP,A);
     CALL INPUT('INT',ANSWER);
     ANSWER1 = 'L,';
   END;
   ELSE SIGNAL ERROR;
   JCL(2) =  '//  TIME=(' || ANSWER || ').CLASS=' || ANSWER1;
   JCL(3) =  '//  MSGCLASS=X,NOTIFY=*';
   JCL(4) =  '/*PASSWORD ????';
   PUT FILE(SCREEN) EDIT
     ('ENTER THE "ROOM" FOR THE OUTPUT WINDOW.',
      'SINGLE CHARACTER, BETWEEN "A" AND "Z":') (2(SKIP,A));
   CALL INPUT('CHAR',ANSWER);
   JCL(5) =  '/*JOBPARM ROOM=' || ANSWER;
   JCL(7) =  '//KONI EXEC PGM=KONIKOW,REGION=1500K';
   JCL(8) =  '//STEPLIB  DD DISP=SHR,DSN=U11236C.KONI.LOAD ';
   PUT FILE(SCREEN) EDIT
     ('ENTER THE COMPLETE OUTPUT DATA SET NAME',
      '(NO QUOTES) :')
     (2(SKIP,A));
   CALL INPUT('CHAR',ANSWER);
   IF LENGTH(ANSWER) > 44 THEN DO;
```

```
      PUT FILE(SCREEN) EDIT ('DATA SET NAME HAS BEEN TRUNCATED')
                            (SKIP(2),A);
      ANSWER = SUBSTR(ANSWER,1,44);
    END;
    JCL(9) =  '//FT06F001 DD DSN=' || ANSWER || ',UNIT=STORAGE,';
    JCL(10) = '//                SPACE=(TRK,(10,10)),DISP=(MOD,CATLG),';
    JCL(11) = '//                DCB=(RECFM=VBA,LRECL=133,BLKSIZE=7448)';
    PUT FILE(SCREEN) EDIT
      ('ENTER THE COMPLETE GRAPHICS OUTPUT DATA SET NAME',
       '(NO QUOTES) :')
      (2(SKIP,A));
    CALL INPUT('CHAR',ANSWER);
    IF LENGTH(ANSWER) > 44 THEN DO;
      PUT FILE(SCREEN) EDIT ('DATA SET NAME HAS BEEN TRUNCATED')
                            (SKIP(2),A);
      ANSWER = SUBSTR(ANSWER,1,44);
    END;
    JCL(12) =  '//FT10F001 DD DSN=' || ANSWER || ',UNIT=STORAGE,';
    JCL(13) = '//                SPACE=(TRK,(10,10)),DISP=(MOD,CATLG),';
    JCL(14) = '//                DCB=(RECFM=VB,LRECL=255,BLKSIZE=7476)';
    JCL(15)=  '//FT07F001 DD SYSOUT=B';
    JCL(16) = '//FT05F001 DD * ';
    ANSWER = 'Y';
    DO WHILE(ANSWER = 'Y');
      PUT FILE(SCREEN) EDIT
        ('THE FOLLOWING IS THE JCL') (SKIP,A);
      DO I=1 TO 16 ;
        PUT FILE(SCREEN) EDIT
          ('  ',I,') ',JCL(I)) (SKIP,A,F(2),A,A(72));
      END;
      PUT FILE(SCREEN) EDIT
        ('DO YOU WISH TO CHANGE ANYTHING (Y/N) :') (SKIP,A);
      CALL INPUT('ANS',ANSWER);
      IF ANSWER = 'Y' THEN DO;
        PUT FILE(SCREEN) EDIT
          ('ENTER THE NUMBER OF THE LINE YOU WISH TO CHANGE.',
           '(ONLY ONE AT A TIME):') (A,SKIP,A);
        CALL INPUTR('INT',ANSWER1,1,15);
        I=DBLANK(ANSWER1);
        PUT FILE(SCREEN) EDIT(JCL(I),'ENTER THE COMPLETE LINE . . .:')
          (SKIP,A(72),SKIP,A,SKIP,A);
        CALL INPUT('CHAR',JCL(I));
      END;
  END;
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                              (GTJCLM   )
 GTJCLM: PROC;
 /* THE GTJCL SUBROUTINE IS USED TO PROMPT THE USER FOR
    THE CORRECT JCL TO RUN THE MODEL ON A MICROCOMPUTER.
 */
   DCL ANSWER                         CHAR(80) VAR,
       ANSWER1                        CHAR(80) VAR,
       I                              FIXED BIN;
   DCL INPUT                          ENTRY(CHAR(4), CHAR(80) VAR);
   PUT FILE(SCREEN) EDIT ('SET UP JCL FOR MODEL')(SKIP,A);
   PUT FILE(SCREEN) EDIT
     ('ENTER THE DRIVE IDENTIFIER FOR THE MODEL :') (SKIP,A);
   CALL INPUT('CHAR',ANSWER);
   IF LENGTH(ANSWER)=0 THEN JCL(1)='KONIMOD ';
   ELSE JCL(1)=ANSWER || 'KONIMOD ';
   PUT FILE(SCREEN) EDIT
     ('ENTER THE COMPLETE OUTPUT DATA SET NAME',
      '(INCLUDE DRIVE IDENTIFIER) :')
     (2(SKIP,A));
   CALL INPUT('CHAR',ANSWER);
   IF LENGTH(ANSWER) > 44 THEN DO;
     PUT FILE(SCREEN) EDIT ('DATA SET NAME HAS BEEN TRUNCATED')
                           (SKIP(2),A);
     ANSWER = SUBSTR(ANSWER,1,44);
   END;
   JCL(1)=JCL(1) || ANSWER || ','|| FILENM|| ',';
   PUT FILE(SCREEN) EDIT
     ('ENTER THE COMPLETE GRAPHICS OUTPUT DATA SET NAME',
      '(INCLUDE DRIVE IDENTIFIER) :')
     (2(SKIP,A));
   CALL INPUT('CHAR',ANSWER);
   IF LENGTH(ANSWER) > 44 THEN DO;
     PUT FILE(SCREEN) EDIT ('DATA SET NAME HAS BEEN TRUNCATED')
                           (SKIP(2),A);
     ANSWER = SUBSTR(ANSWER,1,44);
   END;
   JCL(1)=JCL(1) || ANSWER;
   ANSWER = 'Y';
   DO WHILE (ANSWER = 'Y');
     PUT FILE(SCREEN) EDIT ('THE FOLLOWING IS THE JCL') (SKIP,A);
     PUT FILE(SCREEN) EDIT (JCL(1)) (SKIP,A(72));
     PUT FILE(SCREEN) EDIT
       ('DO YOU WISH TO CHANGE ANYTHING (Y/N) :') (SKIP,A);
     CALL INPUT('ANS',ANSWER);
     IF ANSWER = 'Y' THEN DO;
       PUT FILE(SCREEN) EDIT(JCL(1),'ENTER THE COMPLETE LINE . . .:')
           (SKIP,A(72),SKIP,A,SKIP,A);
         CALL INPUT('CHAR',JCL(1));
     END;
   END;
   I=LENGTH(FILENM);
   DO WHILE ((SUBSTR(FILENM,I,1) ¬= '.') & (I > 0));
     I=I-1;
   END;
   IF I=0 THEN ANSWER1=FILENM || '.BAT';
   ELSE ANSWER1=SUBSTR(FILENM,1,I) || 'BAT';
   OPEN FILE(JCLF) STREAM OUTPUT TITLE(ANSWER1) LINESIZE(80);
   PUT FILE(JCLF) EDIT(JCL(1)) (COL(1),A(80));
   CLOSE FILE(JCLF);
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                         (GTJCLD  )
 GTJCLD: PROC;
 /* THE GTJCL SUBROUTINE IS USED TO PROMPT THE USER FOR
    THE CORRECT JCL TO RUN THE MODEL ON A DEC/VAX.
 */
   DCL ANSWER                            CHAR(80) VAR,
       ANSWER1                           CHAR(80) VAR,
       I                                 FIXED BIN;
   DCL INPUT                             ENTRY(CHAR(4), CHAR(80) VAR),
       DBLANK                  ENTRY(CHAR(80) VAR) RETURNS(CHAR(80) VAR),
       DATATP                  ENTRY(CHAR(80) VAR, CHAR(4)),
       INPUTR                  ENTRY(CHAR(4), CHAR(80) VAR, FLOAT, FLOAT);
   PUT FILE(SCREEN) EDIT ('SET UP JCL FOR MODEL')(SKIP,A);
   JCL(1)='$ DEFINE FOR005 ' || FILENM ;
   PUT FILE(SCREEN) EDIT
     ('ENTER THE COMPLETE OUTPUT DATA SET NAME :') (SKIP,A);
   CALL INPUT('CHAR',ANSWER);
   IF LENGTH(ANSWER) > 44 THEN DO;
     PUT FILE(SCREEN) EDIT ('DATA SET NAME HAS BEEN TRUNCATED')
                           (SKIP(2),A);
     ANSWER = SUBSTR(ANSWER,1,44);
   END;
   JCL(2)='$ DEFINE FOR006 ' || ANSWER ;
   PUT FILE(SCREEN) EDIT
     ('ENTER THE COMPLETE GRAPHICS OUTPUT DATA SET NAME :')(SKIP,A);
   CALL INPUT('CHAR',ANSWER);
   IF LENGTH(ANSWER) > 44 THEN DO;
     PUT FILE(SCREEN) EDIT ('DATA SET NAME HAS BEEN TRUNCATED')
                           (SKIP(2),A);
     ANSWER = SUBSTR(ANSWER,1,44);
   END;
   JCL(3)='$ DEFINE FOR010 ' || ANSWER ;
   JCL(4)='$ RUN KONIMOD.EXE';
   ANSWER = 'Y';
   DO WHILE (ANSWER = 'Y');
     PUT FILE(SCREEN) EDIT ('THE FOLLOWING IS THE JCL') (SKIP,A);
     DO I=1 TO 4;
       PUT FILE(SCREEN) EDIT ('   ',I,') ',JCL(I)) (SKIP,A,F(2),A,A(72));
     END;
     PUT FILE(SCREEN) EDIT
       ('DO YOU WISH TO CHANGE ANYTHING (Y/N) :') (SKIP,A);
     CALL INPUT('ANS',ANSWER);
     IF ANSWER = 'Y' THEN DO;
       PUT FILE(SCREEN)
         EDIT('ENTER THE NUMBER OF THE LINE YOU WISH TO CHANGE.',
              '(ONLY ONE AT A TIME):') (A,SKIP,A);
         CALL INPUTR('INT',ANSWER1,1,4);
         I=DBLANK(ANSWER1);
       PUT FILE(SCREEN) EDIT(JCL(I),'ENTER THE COMPLETE LINE . . .:')
           (SKIP,A(72),SKIP,A,SKIP,A);
         CALL INPUT('CHAR',JCL(I));
     END;
   END;
   I=LENGTH(FILENM);
   DO WHILE ((SUBSTR(FILENM,I,1) ¬= '.') & (I > 0));
     I=I-1;
   END;
   IF I=0 THEN ANSWER1=FILENM || '.COM';
   ELSE ANSWER1=SUBSTR(FILENM,1,I) || 'COM';
   OPEN FILE(JCLF) STREAM OUTPUT TITLE(ANSWER1) LINESIZE(80);
   DO I=1 TO 4;
     PUT FILE(JCLF) EDIT(JCL(I)) (COL(1),A(80));
   END;
```

```
  CLOSE FILE(JCLF);                                                     00000630
END;                                                                    00000640
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                   (GTVAR    )
 GTVAR: PROC;
 /* THE GTVAR SUBROUTINE PROMPTS FOR THE NECESSARY INFORMATION
    TO RUN THE MODEL. (VARIABLES ETC.)
 */
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.          */
 %INCLUDE 'B:EXTVAR.PLI';
 /**********************************************/
   DCL CHARACTER                      CHAR(4) STATIC INIT('CHAR'),
       INTEGER                        CHAR(4) STATIC INIT('INT '),
       REAL                           CHAR(4) STATIC INIT('REAL'),
       NUMBER                         CHAR(4) STATIC INIT('NUM '),
       ANSWER                         CHAR(4) STATIC INIT('ANS '),
       TYPE                           CHAR(4) STATIC INIT(''),
       REPLY                          CHAR(80) VAR,
       UPPER_RANGE                    FLOAT STATIC INIT(0),
       LOWER_RANGE                    FLOAT STATIC INIT(0),
       LEN                            FIXED BIN STATIC INIT(4),
       VAR_INFO(10)                   CHAR(80) VAR,
       NUMBER1                        FLOAT STATIC INIT(0),
       NUMBER2                        FLOAT STATIC INIT(0),
       COUNTER                        FIXED BIN,
       COUNTER1                       FIXED BIN,
       TEMPC                          CHAR(80) VAR,
       TEMPC2                         CHAR(80) VAR,
       TEMPN                          FLOAT STATIC INIT(0);
 DCL DBLANK                   ENTRY(CHAR(80) VAR) RETURNS(CHAR(80) VAR);
 DO COUNTER=1 TO 10;
   VAR_INFO(COUNTER) = '';
 END;
 VAR_INFO(1) = 'DO YOU WISH TO VERIFY ALL ENTRIES (Y/N) :';
 TYPE = ANSWER;
 LEN = 1;
 TEMPC = PARMGT();
 IF (TEMPC = 'N') THEN VERIFY=0;
 ELSE VERIFY=1;
 VAR_INFO(1) = 'ENTER THE TITLE, DESCRIPTIVE OF THE PROBLEM.';
 VAR_INFO(2) = 'MAXIMUM OF 80 CHARACTERS. ';
 VAR_INFO(3) = 'VARIABLE "TITLE" :';
 TYPE = CHARACTER;
 LEN = 80;
 TITLE = PARMGT();
 LEN = 4;
 TYPE = INTEGER;
 VAR_INFO(1) = 'ENTER THE NUMBER OF NODES IN THE "X" DIRECTION.';
 VAR_INFO(2) = '("X" REFERS TO COLUMNS).';
 VAR_INFO(3) = 'MINIMUM OF 3, MAXIMUM OF '||NX_LMT||'.';
 VAR_INFO(4) = 'VARIABLE "NX" :';
 LOWER_RANGE = 3;
 UPPER_RANGE = NX_LMT;
 NX = PARMGT();
 VAR_INFO(1) = 'ENTER THE NUMBER OF NODES IN THE "Y" DIRECTION.';
 VAR_INFO(2) = '("Y" REFERS TO ROWS).';
 VAR_INFO(3) = 'MINIMUM OF 3, MAXIMUM OF '||NY_LMT||'.';
 VAR_INFO(4) = 'VARIABLE "NY" :';
 LOWER_RANGE = 3;
 UPPER_RANGE = NY_LMT;
 NY = PARMGT();
 VAR_INFO(1) = 'ENTER THE MAXIMUM NUMBER OF PARTICLES.';
 VAR_INFO(2) = 'MAXIMUM OF 3200.';
 VAR_INFO(3) = 'VARIABLE "NPMAX" :';
 UPPER_RANGE = 3200;
```

```
NPMAX = PARMGT();
VAR_INFO(1) = 'ENTER THE NUMBER OF PARTICLES PER NODE.';
VAR_INFO(2) = 'OPTIONS = 4,5,8,9:';
VAR_INFO(3) = 'VARIABLE "NPTPND" :';
NPTPND = PARMGT();
VAR_INFO(1) = 'ENTER THE NUMBER OF OBSERVATION POINTS TO BE';
VAR_INFO(2) = 'SPECIFIED NEXT.  MAXIMUM OF '||OBS_LMT||'.';
VAR_INFO(3) = 'VARIABLE "NUMOBS" :';
UPPER_RANGE = OBS_LMT;
NUMOBS = PARMGT();
COUNTER = 0;
NUMBER1 = NUMOBS;
DO WHILE(COUNTER < NUMBER1);
  IF (COUNTER = 0) THEN DO;
    VAR_INFO(1) =
      'NOTE:  OBSERVATION WELLS SHOULD NOT BE PLACED IN THE';
    VAR_INFO(2) = '       FIRST OR LAST ROWS OR COLUMNS.';
  END;
  ELSE DO;
    VAR_INFO(1) = ' ';
    VAR_INFO(2) = ' ';
  END;
  COUNTER = COUNTER + 1;
  TEMPC = COUNTER;
  TEMPC = DBLANK(TEMPC);
  VAR_INFO(3) =
    'ENTER THE "X" COORDINATE OF OBSERVATION POINT '||TEMPC|| '.';
  VAR_INFO(4) = 'VARIABLE "IXOBS(' || TEMPC || ')" :' ;
  LEN = 2;
  IXOBS(COUNTER) = PARMGT();
  VAR_INFO(1) =
    'ENTER THE "Y" COORDINATE OF OBSERVATION POINT '||TEMPC|| '.';
  VAR_INFO(2) = 'VARIABLE "IYOBS(' || TEMPC || ')" :' ;
  IYOBS(COUNTER) = PARMGT();
END;
VAR_INFO(1) = 'ENTER THE NUMBER OF NODE IDENTIFICATION CODES';
VAR_INFO(2) = 'TO BE SPECIFIED.  MAXIMUM OF '||NC_LMT||'.';
VAR_INFO(3) = 'VARIABLE "NCODES" :';
LEN = 4;
UPPER_RANGE = NC_LMT;
TYPE = INTEGER;
NCODES = PARMGT();
NUMBER2 = NCODES;
COUNTER1 = 1;
DO WHILE(COUNTER1 <= NUMBER2);
  TEMPC = COUNTER1;
  TEMPC = DBLANK(TEMPC);
  VAR_INFO(1) = 'ENTER NODE IDENTIFICATION CODE ' || TEMPC || '.';
  VAR_INFO(2) = 'VARIABLE "ICODE(' || TEMPC || ')" :';
  LEN = 2;
  TYPE = INTEGER;
  ICODE(COUNTER1) = PARMGT();
  VAR_INFO(1) = 'ENTER CORRESPONDING LEAKANCE ((FT/SEC)/FT).';
  VAR_INFO(2) =
     '(VERTICAL PERMEABILITY / THICKNESS OF CONFINING LAYER)';
  VAR_INFO(3) = 'MAXIMUM LENGTH OF 10. REAL NUMBER.';
  VAR_INFO(4) = 'NOTE:  (FT/SEC)/FT = (GPD/FT)/FT * 1.54723 E-6';
  VAR_INFO(5) = 'VARIABLE "FCTR1(' || TEMPC || ')" :';
  LEN = 10;
  TYPE = REAL;
  FCTR1(COUNTER1) = PARMGT();
  VAR_INFO(1) = 'ENTER CONCENTRATION (MG/L) FOR ICODE '||TEMPC||'.';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10. REAL NUMBER.';
  VAR_INFO(3) = 'VARIABLE "FCTR2(' || TEMPC || ')" :';
  FCTR2(COUNTER1) = PARMGT();
  VAR_INFO(1) = 'ENTER OPTION TO RETAIN RECHARGE MATRIX VALUES :';
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      VAR_INFO(2) = '  0) RETAIN VALUES.';
      VAR_INFO(3) = '  1) USE VALUE OF FCTR3.';
      VAR_INFO(4) = 'VARIABLE "OVERRD(' || TEMPC || ')" :';
      LEN = 2;
      TYPE = INTEGER;
      OVERRD(COUNTER1) = PARMGT();
      IF ( OVERRD(COUNTER1)=' 0' )
      THEN FCTR3(COUNTER1)='        0.';
      ELSE DO ;
        VAR_INFO(1) =
          'ENTER RECHARGE/DISCHARGE (FT/SEC) FOR ICODE '||TEMPC|| '.';
        VAR_INFO(2) = 'NEGATIVE FOR RECHARGE, POSITIVE FOR DISCHARGE.';
        VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
        VAR_INFO(4) = 'NOTE:  FT/SEC = IN/YR * 26.7918 E-10';
        VAR_INFO(5) = 'ENTER VARIABLE "FCTR3(' || TEMPC || ')" :';
        LEN = 10;
        TYPE = REAL;
        FCTR3(COUNTER1) = PARMGT();
      END;
      COUNTER1 = COUNTER1 + 1;
    END;
    VAR_INFO(1) = 'ENTER THE STORAGE COEFFICIENT.';
    VAR_INFO(2) = '0 FOR STEADY FLOW PROBLEMS.';
    VAR_INFO(3) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
    VAR_INFO(4) = 'VARIABLE "S" :';
    LEN = 5;
    TYPE = REAL;
    S = PARMGT();
    VAR_INFO(1) = 'ENTER THE NUMBER OF PUMPING PERIODS.';
    VAR_INFO(2) = 'MAXIMUM OF '||PMP_LMT||'.';
    VAR_INFO(3) = 'VARIABLE "NPMP" :';
    UPPER_RANGE = PMP_LMT;
    LEN = 4;
    TYPE = INTEGER;
    NPMP = PARMGT() ;
    COUNTER1 = 1;
    NUMBER2 = NPMP;
    DO WHILE(COUNTER1 = 1 | COUNTER1 <= NUMBER2 );
      TEMPC2 = COUNTER1;
      IF COUNTER1 > 1 THEN DO;
        VAR_INFO(1) =
        'DO YOU WISH TO MAKE ANY REVISIONS TO PUMPING PERIOD '
         ||TEMPC2|| '?' ;
        VAR_INFO(2) = 'VARIABLE "ICHK" (Y/N):';
        LEN = 1;
        TYPE = ANSWER;
        TEMPC = PARMGT();
        IF TEMPC = 'N' THEN ICHK(COUNTER1 - 1) = '0';
        ELSE ICHK(COUNTER1 - 1) = '1';
      END;
      IF COUNTER1 = 1  | ICHK(COUNTER1 - 1) = '1' THEN DO;
        VAR_INFO(1) = 'ENTER THE MAXIMUM NUMBER OF TIME STEPS IN ';
        VAR_INFO(2) = 'PUMPING PERIOD ' ||TEMPC2|| '.  MAXIMUM OF 100.';
        VAR_INFO(3) = 'VARIABLE "NTIM" :';
        UPPER_RANGE = 100;
        LEN = 4;
        TYPE = INTEGER;
        NTIM(COUNTER1) = PARMGT();
        VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
        VAR_INFO(2) = 'ENTER THE TIME STEP INTERVAL FOR PRINTING';
        VAR_INFO(3) = 'HYDRAULIC AND CHEMICAL OUTPUT DATA.';
        VAR_INFO(4) = 'VARIABLE "NPNT" :';
        NPNT(COUNTER1) = PARMGT();
        VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
        VAR_INFO(2) = 'ENTER THE NUMBER OF ITERATION PARAMETERS FOR';
        VAR_INFO(3) = 'ADIP.  USUALLY FROM 4 TO 7.';
```

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VAR_INFO(4) = 'VARIABLE "NITP" :';
NITP(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE MAXIMUM ALLOWABLE NUMBER OF ITERATIONS';
VAR_INFO(3) = 'IN ADIP OR SIP. USUALLY FROM 100 TO 200.';
VAR_INFO(4) = 'VARIABLE "ITMAX" :' ;
ITMAX(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE PARTICLE MOVEMENT INTERVAL (IMOV)';
VAR_INFO(3) = 'FOR PRINTING CHEMICAL OUTPUT DATA.';
VAR_INFO(4) ='SPECIFY 0 TO PRINT ONLY AT THE END OF TIME STEPS.';
VAR_INFO(5) = 'VARIABLE "NPNTMV" :';
NPNTMV(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE OPTION FOR PRINTING COMPUTED';
VAR_INFO(3) = 'VELOCITIES.';
VAR_INFO(4) = '  0) DO NOT PRINT.';
VAR_INFO(5) = '  1) PRINT FOR FIRST TIME STEP.';
VAR_INFO(6) = '  2) PRINT FOR ALL TIME STEPS.';
VAR_INFO(7) = 'CHOOSE ONE OF THE ABOVE.';
VAR_INFO(8) = 'VARIABLE "NPNTVL" :';
UPPER_RANGE = 2;
NPNTVL(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE OPTION FOR PRINTING COMPUTED';
VAR_INFO(3) = 'DISPERSION EQUATION COEFFICIENTS.';
VAR_INFO(4) = '  0) DO NOT PRINT.';
VAR_INFO(5) = '  1) PRINT FOR FIPST TIME STEP.';
VAR_INFO(6) = '  2) PRINT FOR ALL TIME STEPS.';
VAR_INFO(7) = 'CHOOSE ONE OF THE ABOVE.';
VAR_INFO(8) = 'VARIABLE "NPNTD" :';
UPPER_RANGE = 2;
NPNTD(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE OPTION TO PRINT COMPUTED CHANGES IN';
VAR_INFO(3) = 'CONCENTRATION.';
VAR_INFO(4) = '  0) DO NOT PRINT.';
VAR_INFO(5) = '  1) PRINT.';
VAR_INFO(6) = 'CHOOSE ONE OF THE ABOVE.';
VAR_INFO(7) = 'VARIABLE "NPDELC" :';
UPPER_RANGE = 1;
NPDELC(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE OPTION TO PUNCH VELOCITY DATA.';
VAR_INFO(3) = '  0) DO NOT PUNCH.';
VAR_INFO(4) = '  1) PUNCH FOR FIRST TIME STEP.';
VAR_INFO(5) = '  2) PUNCH FOR ALL TIME STEPS.';
VAR_INFO(6) = 'CHOOSE ONE OF THE ABOVE.';
VAR_INFO(7) = 'VARIABLE "NPNCHV" :';
UPPER_RANGE = 2;
NPNCHV(COUNTER1) = PARMGT();
VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
VAR_INFO(2) = 'ENTER THE PUMPING PERIOD (YEARS).';
VAR_INFO(3) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(4) = 'VARIABLE "PINT" :';
TYPE = REAL;
LEN = 5;
PINT(COUNTER1) = PARMGT();
NUMBER1 = S;
IF NUMBER1 ¬= 0 THEN DO;
  VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
  VAR_INFO(2) = 'ENTER THE TIME INCREMENT MULTIPLIER FOR';
  VAR_INFO(3) = 'TRANSIENT FLOW PROBLEMS.';
  VAR_INFO(4) = 'THIS IS DISREGARDED IF S=0 .';
  VAR_INFO(5) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
  VAR_INFO(6) = 'VARIABLE "TIMX" :';
```

```
       TIMX(COUNTER1) = PARMGT();
       VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
       VAR_INFO(2) = 'ENTER THE SIZE OF THE INITIAL TIME STEP';
       VAR_INFO(3) = 'IN SECONDS.';
       VAR_INFO(4) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
       VAR_INFO(5) = 'VARIABLE "TINIT" :';
       TINIT(COUNTER1) = PARMGT();
     END;
     ELSE DO;
       TIMX(COUNTER1) = '   O';
       TINIT(COUNTER1) = '    O';
     END;
       VAR_INFO(1) = 'PUMPING PERIOD ' || TEMPC2 || ':';
     VAR_INFO(2) = 'ENTER THE NUMBER OF PUMPING OR INJECTION';
     VAR_INFO(3) = 'WELLS TO BE SPECIFIED.';
     VAR_INFO(4) = 'MAXIMUM OF '||NR_LMT||'.';
     VAR_INFO(5) = 'VARIABLE "NREC" :';
     UPPER_RANGE = NR_LMT;
     LEN = 4;
     TYPE = INTEGER;
     NREC(COUNTER1) = PARMGT();
     NUMBER1 = NREC(COUNTER1);
     COUNTER = O;
     DO WHILE(COUNTER < NUMBER1);
       COUNTER = COUNTER + 1;
       TEMPC = COUNTER;
       TEMPC = DBLANK(TEMPC);
       VAR_INFO(1) =
       'ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL '
        ||TEMPC|| '.';
       VAR_INFO(2) = 'VARIABLE "IX(' || TEMPC || ')" :';
       LEN = 2;
       TYPE = INTEGER;
       IX(COUNTER1,COUNTER) = PARMGT();
       VAR_INFO(1) =
       'ENTER THE Y COORDINATE OF PUMPING OR INJECTION WELL '
        ||TEMPC|| '.';
       VAR_INFO(2) = 'VARIABLE "IY(' || TEMPC || ')" :';
       IY(COUNTER1,COUNTER) = PARMGT();
       VAR_INFO(1) =
        'ENTER THE RATE (FT**3/SEC) FOR WELL ' ||TEMPC|| '.';
       VAR_INFO(2) = 'POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.';
       VAR_INFO(3) = 'MAXIMUM LENGTH OF 8, REAL NUMBER.';
       VAR_INFO(4) = 'NOTE:  FT**3/SEC = GAL/MIN * 0.0022278';
       VAR_INFO(5) = 'VARIABLE "REC(' || TEMPC || ')" :';
       TYPE = REAL;
       LEN = 8;
       REC(COUNTER1,COUNTER) = PARMGT();
       TEMPN = REC(COUNTER1,COUNTER);
       IF TEMPN < O THEN DO;
         VAR_INFO(1) = 'ENTER THE CONCENTRATION OF THE INJECTED';
         VAR_INFO(2) = 'FLUID (MG/L) FOR WELL ' ||TEMPC|| '.';
         VAR_INFO(3) = 'MAXIMUM LENGTH OF 8, REAL NUMBER.';
         VAR_INFO(4) = 'VARIABLE "CNRECH(' || TEMPC || ')" :';
         TYPE = REAL;
         LEN = 8;
         CNRECH(COUNTER1,COUNTER) = PARMGT();
      END;
      ELSE CNRECH(COUNTER1,COUNTER) = '     0.0';
     END;
  END;
  COUNTER1 = COUNTER1 + 1;
END;
VAR_INFO(1) = 'ENTER THE CONVERGENCE CRITERIA FOR THE FLOW';
VAR_INFO(2) = 'EQUATION.  USUALLY LESS THAN .01 .';
VAR_INFO(3) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(4) = 'VARIABLE "TOL" :';
LEN = 5;
TYPE = REAL;
TOL = PARMGT();
VAR_INFO(1) = 'ENTER THE EFFECTIVE POROSITY.';
VAR_INFO(2) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(3) = 'VARIABLE "POROS" :';
POROS = PARMGT();
VAR_INFO(1) = 'ENTER THE CHARACTERISTIC LENGTH (FEET).';
VAR_INFO(2) = '(LONGITUDINAL DISPERSIVITY).';
VAR_INFO(3) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(4) = 'VARIABLE "BETA" :';
BETA = PARMGT();
VAR_INFO(1) = 'ENTER THE NODE SIZE IN THE "X" DIRECTION (FEET).';
VAR_INFO(2) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(3) = 'VARIABLE "XDEL" :';
XDEL = PARMGT();
VAR_INFO(1) = 'ENTER THE NODE SIZE IN THE "Y" DIRECTION (FEET).';
VAR_INFO(2) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(3) = 'VARIABLE "YDEL" :';
YDEL = PARMGT();
VAR_INFO(1) = 'ENTER THE RATIO OF TRANSVERSE TO ';
VAR_INFO(2) = 'LONGITUDINAL DISPERSIVITY.';
VAR_INFO(3) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(4) = 'VARIABLE "DLTRAT" :';
DLTRAT = PARMGT();
VAR_INFO(1) = 'ENTER THE MAXIMUM CELL DISTANCE PER PARTICLE';
VAR_INFO(2) = 'MOVE. VALUE BETWEEN 0 AND 1.0 .';
VAR_INFO(3) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(4) = 'VARIABLE "CELDIS" :';
UPPER_RANGE = 1.;
CELDIS = PARMGT();
VAR_INFO(1) = 'ENTER THE RATIO OF TRANSMISSIVITY TENSORS';
VAR_INFO(2) = '(T(YY) TO T(XX)).';
VAR_INFO(3) = '(USE 1.0 FOR ISOTROPIC AQUIFER.  IF ANISOTROPIC,';
VAR_INFO(4) = 'MAJOR DIRECTION OF FLOW SHOULD BE ALONG COLUMNS.)';
VAR_INFO(5) = 'MAXIMUM LENGTH OF 5, REAL NUMBER.';
VAR_INFO(6) = 'VARIABLE "ANFCTR" :';
ANFCTR = PARMGT();
VAR_INFO(1) = 'IS DECAY TO BE SIMULATED (Y/N)?';
VAR_INFO(2) = 'VARIABLE "NDECAY" :';
LEN=1;
TYPE=ANSWER;
REPLY=PARMGT();
IF REPLY='N' THEN DO;
  NDECAY = '    0';
  DCYTIM = '         0.';
END;
ELSE DO;
  NDECAY = '    1';
  VAR_INFO(1) = 'ENTER DECAY HALFLIFE (YEARS).';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
  VAR_INFO(3) = 'VARIABLE "DCYTIM" :';
  LEN = 10;
  TYPE = REAL;
  DCYTIM = PARMGT();
END;
VAR_INFO(1) = 'INDICATE WHICH SORBTION SIMULATION';
VAR_INFO(2) = 'IS TO BE USED :';
VAR_INFO(3) = '  0) NONE ';
VAR_INFO(4) = '  1) LINEAR ';
VAR_INFO(5) = '  2) LANGMUIR ';
VAR_INFO(6) = '  3) FREUDLICH ';
VAR_INFO(7) = 'VARIABLE "NSORB" :';
LEN = 5;
TYPE = INTEGER;
```

```
LOWER_RANGE = 0;
UPPER_RANGE = 3;
NSORB = PARMGT();
DENROC = '        0.';
SORBQR = '        0.';
SORBST = '        0.';
SORBAL = '        0.';
IF (NSORB = '    0') THEN;
ELSE DO;
  LEN =10;
  TYPE = REAL;
  VAR_INFO(1) =
    'ENTER THE PARTICLE DENSITY OF THE AQUIFER (GM/CM**3).';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
  VAR_INFO(3) = 'VARIABLE "DENROC" :';
  DENROC = PARMGT();
  VAR_INFO(1) = 'ENTER VALUE OF "KD" (ML/G).';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
  VAR_INFO(3) = 'VARIABLE "SORBQR" :';
  SORBQR = PARMGT();
  IF (NSORB = '    2') THEN DO;
    VAR_INFO(1) = 'ENTER THE SORBTION SATURATION VALUE ';
    VAR_INFO(2) = 'FOR THE LANGMUIR.';
    VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
    VAR_INFO(4) = 'VARIABLE "SORBST" :';
    SORBST = PARMGT();
  END;
  IF (NSORB = '    3') THEN DO;
    VAR_INFO(1) = 'ENTER THE VALUE OF ALPHA FOR THE';
    VAR_INFO(2) = 'FREUDLICH ISOTHERM.';
    VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
    VAR_INFO(4) = 'VARIABLE "SORBAL" :';
    SORBAL = PARMGT();
  END;
END;
LEN=4;
TYPE=INTEGER;
VAR_INFO(1) = 'CHOOSE THE ITERATIVE PROCEDURE DESIRED TO SOLVE';
VAR_INFO(2) = 'A FINITE DIFFERENCE APPROXIMATION TO THE';
VAR_INFO(3) = 'GROUND-WATER FLOW EQUATION.';
VAR_INFO(4) = '  0) ADIP--ALTERNATING DIRECTION IMPLICIT PROCEDURE';
VAR_INFO(5) = '  1) SIP --STRONGLY IMPLICIT PROCEDURE';
VAR_INFO(6) = 'VARIABLE "ISOLV": ';
ISOLV=PARMGT();
VAR_INFO(1) = 'IS THIS SIMULATION HEAD ONLY OR SOLUTE TRANSPORT ?';
VAR_INFO(2) = '  0) TRANSPORT';
VAR_INFO(3) = '  1) HEAD ONLY';
VAR_INFO(4) = 'VARIABLE "IHEAD": ';
IHEAD=PARMGT();
VAR_INFO(1) = 'IS THE AQUIFER BEING MODELED CONFINED OR';
VAR_INFO(2) = 'UNCONFINED ?  ';
VAR_INFO(3) = '  0) CONFINED ';
VAR_INFO(4) = '  1) UNCONFINED ';
VAR_INFO(5) = 'VARIABLE "FCON": ';
FCON=PARMGT();
VAR_INFO(1) = 'DO YOU WISH TO ENTER THE TRANSMISSIVITY ';
VAR_INFO(2) = 'OR PERMEABILITY FOR THE AREA ?';
VAR_INFO(3) = '  0) TRANSMISSIVITY ';
VAR_INFO(4) = '  1) PERMEABILITY';
VAR_INFO(5) = 'VARIABLE "TP": ';
TP=PARMGT();
IF (FCON = '    1') THEN DO;
  VAR_INFO(1) = 'DO YOU WISH TO ENTER THE BOTTOM ELEVATION ';
  VAR_INFO(2) = 'OR SATURATED THICKNESS FOR THE AREA ?';
  VAR_INFO(3) = '  0) SATURATED THICKNESS ';
  VAR_INFO(4) = '  1) BOTTOM ';
```

```
    VAR_INFO(5) = 'VARIABLE "BTM": ';
    BTM = PARMGT();
  END;
  ELSE BTM = '   0';
/**************************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.          */
%INCLUDE 'B:PARMGT.PLI';
/**************************************************/
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                     (GTMTRX   )
 GTMTRX: PROC;
 /* THE GTMTRX SUBROUTINE IS USED TO PROMPT FOR THE
    NECESSARY INFORMATION TO CREATE THE MATRICES.
 */
 /*********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.       */
 %INCLUDE 'B:EXTVAR.PLI';
 /*********************************************/
   DCL REPLY                          CHAR(80) VAR,
       TEMP_NUM                       FIXED BIN,
       TEMP_NUM1                      FIXED BIN,
       I                              FIXED BIN,
       J                              FIXED BIN,
       CHARACTER                      CHAR(4) STATIC INIT('CHAR'),
       INTEGER                        CHAR(4) STATIC INIT('INT '),
       REAL                           CHAR(4) STATIC INIT('REAL'),
       NUMBER                         CHAR(4) STATIC INIT('NUM '),
       ANSWER                         CHAR(4) STATIC INIT('ANS '),
       TYPE                           CHAR(4) STATIC INIT(''),
       UPPER_RANGE                    FLOAT STATIC INIT(0),
       LOWER_RANGE                    FLOAT STATIC INIT(0),
       LEN                            FIXED BIN STATIC INIT(4),
       VAR_INFO(10)                   CHAR(80) VAR;
  DCL MTRXED                          ENTRY((NX_LMT,NY_LMT) CHAR(4) VAR,
                                      FIXED BIN, FIXED BIN, FIXED BIN);
  DO I=1 TO 10;
    VAR_INFO(I) = '';
  END;
  TEMP_NUM = NY;
  TEMP_NUM1 = NX;
  IF (TP = 0) THEN DO;
   VAR_INFO(1) = 'IS THE TRANSMISSIVITY FOR THE AREA CONSTANT ?';
   VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE TRANSMISSIVITY';
  END;
  ELSE DO;
   VAR_INFO(1) = 'IS THE PERMEABILITY FOR THE AREA CONSTANT ?';
   VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE PERMEABILITY';
  END;
   VAR_INFO(3) = 'FOR THE AREA IS CONSTANT) (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'Y' THEN DO;
    INPT_VPRM = '0';
    IF (TP = 0) THEN DO;
      VAR_INFO(1) =
        'ENTER THE TRANSMISSIVITY FOR THE AREA (FT**2/SEC).';
      VAR_INFO(2) = 'NOTE:  FT**2/SEC = GPD/FT * 1.54723 E-6';
    END;
    ELSE DO;
      VAR_INFO(1) =
        'ENTER THE PERMEABILITY FOR THE AREA (FT/SEC).';
      VAR_INFO(2) = 'NOTE:  FT/SEC = GPD/FT**2 * 1.54723 E-6';
    END;
    VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_VPRM = PARMGT();
  END;
  ELSE DO;
    INPT_VPRM = '1';
    IF (TP = 0) THEN DO;
      VAR_INFO(1) = 'ENTER THE TRANSMISSIVITY MULTIPLIER.';
    VAR_INFO(2) = 'NOTE:  FT**2/SEC = GPD/FT * 1.54723 E-6';
  END;
  ELSE DO;
    VAR_INFO(1) = 'ENTER THE PERMEABILITY MULTIPLIER.';
    VAR_INFO(2) = 'NOTE:  FT/SEC = GPD/FT**2 * 1.54723 E-6';
  END;
  VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
  LEN = 10;
  FACT_VPRM = PARMGT();
  IF (TP = 0) THEN VAR_INFO(1) =
    'WHAT DO YOU WISH THE ENTIRE TRANSMISSIVITY MATRIX ';
  ELSE VAR_INFO(1) =
    'WHAT DO YOU WISH THE ENTIRE PERMEABILITY MATRIX ';
  VAR_INFO(2) = 'INITIALLY SET TO?';
  VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
  LEN = 4;
  REPLY = PARMGT();
  DO I=1 TO TEMP_NUM1;
    DO J=1 TO TEMP_NUM;
      VPRM(J,I) = REPLY;
    END;
  END;
  LEN = 10;
  CALL MTRXED(VPRM,TEMP_NUM1,TEMP_NUM,4);
END;
IF (BTM = 0) THEN DO;
  VAR_INFO(1) = 'IS THE SATURATED THICKNESS FOR THE AREA CONSTANT ?';
  VAR_INFO(2) =
    '(A MATRIX IS NOT REQUIRED IF THE SATURATED THICKNESS';
END;
ELSE DO;
  VAR_INFO(1) = 'IS THE BOTTOM ELEVATION FOR THE AREA CONSTANT ?';
  VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE BOTTOM ELEVATION';
END;
VAR_INFO(3) = 'FOR THE AREA IS CONSTANT) (Y/N):';
TYPE = ANSWER;
REPLY = PARMGT();
IF REPLY = 'Y' THEN DO;
  INPT_THCK = '0';
  IF BTM = 0 THEN
    VAR_INFO(1) =
      'ENTER THE SATURATED THICKNESS FOR THE AREA (FEET).';
  ELSE
    VAR_INFO(1) =
      'ENTER THE BOTTOM ELEVATION FOR THE AREA (FEET).';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
  LEN = 10;
  FACT_THCK = PARMGT();
END;
ELSE DO;
  INPT_THCK = '1';
  IF BTM = 0 THEN
    VAR_INFO(1) = 'ENTER THE SATURATED THICKNESS MULTIPLIER.';
  ELSE
    VAR_INFO(1) = 'ENTER THE BOTTOM ELEVATION MULTIPLIER.';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
  LEN = 10;
  FACT_THCK = PARMGT();
  IF BTM = 0 THEN
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE SATURATED THICKNESS ';
  ELSE
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE BOTTOM ELEVATION ';
  VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
  VAR_INFO(3) = '(MAXIMUM LENGTH OF 3):';
  TYPE = REAL;
  LEN = 3;
  REPLY = PARMGT();
  DO I=1 TO TEMP_NUM1;
    DO J=1 TO TEMP_NUM;
      THCK(J,I) = REPLY;
    END;
  END;
  CALL MTRXED(THCK,TEMP_NUM1,TEMP_NUM,3);
END;
VAR_INFO(1) = 'IS THE POTENTIOMETRIC HEAD FOR THE AREA CONSTANT ?';
VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE POTENTIOMETRIC';
VAR_INFO(3) = 'HEAD FOR THE AREA IS CONSTANT) (Y/N):';
TYPE = ANSWER;
REPLY = PARMGT();
IF REPLY = 'Y' THEN DO;
  INPT_WT = '0';
  VAR_INFO(1) = 'ENTER THE POTENTIOMETRIC HEAD FOR THE AREA (FEET).';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
  LEN = 10;
  FACT_WT = PARMGT();
END;
ELSE DO;
  INPT_WT = '1';
  VAR_INFO(1) = 'ENTER THE POTENTIOMETRIC HEAD MULTIPLIER.';
  VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
  LEN = 10;
  FACT_WT = PARMGT();
  VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE POTENTIOMETRIC HEAD';
  VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
  VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
  TYPE = REAL;
  LEN = 4;
  REPLY = PARMGT();
  DO I=1 TO TEMP_NUM1;
    DO J=1 TO TEMP_NUM;
      WT(J,I) = REPLY;
    END;
  END;
  CALL MTRXED(WT,TEMP_NUM1,TEMP_NUM,4);
END;
VAR_INFO(1) = 'IS THE RECHARGE FOR THE AREA CONSTANT ?';
VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE RECHARGE';
VAR_INFO(3) = ' FOR THE AREA IS CONSTANT) (Y/N):';
TYPE = ANSWER;
REPLY = PARMGT();
IF REPLY = 'Y' THEN DO;
  INPT_RECH = '0';
  VAR_INFO(1) = 'ENTER THE RECHARGE FOR THE AREA (FT/SEC).';
  VAR_INFO(2) = 'NEGATIVE NUMBER; INCLUDES E-T.';
  VAR_INFO(3) = 'NOTE:  FT/SEC = IN/YR * 26.7918 E-10';
  VAR_INFO(4) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
  LEN = 10;
  FACT_RECH = PARMGT();
END;
ELSE DO;
  INPT_RECH = '1';
  VAR_INFO(1) = 'ENTER THE RECHARGE MULTIPLIER.';
  VAR_INFO(2) = 'RECHARGE SHOULD BE NEGATIVE AND INCLUDE E-T.';
  VAR_INFO(3) = 'NOTE:  FT/SEC = IN/YR * 26.7918 E-10';
  VAR_INFO(4) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
  TYPE = REAL;
```

```
      LEN = 10;
      FACT_RECH = PARMGT();
      VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE RECHARGE ';
      VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
      VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
      TYPE = REAL;
      LEN = 4;
      REPLY = PARMGT();
      DO I=1 TO TEMP_NUM1;
        DO J=1 TO TEMP_NUM;
          RECH(J,I) = REPLY;
        END;
      END;
      CALL MTRXED(RECH,TEMP_NUM1,TEMP_NUM,4);
    END;
    VAR_INFO(1) = 'IS THE NODE IDENTIFICATION FOR THE AREA CONSTANT ?';
    VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE NODE IDENTIFICATION';
    VAR_INFO(3) = 'FOR THE AREA IS CONSTANT) (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      INPT_NODEID = '0';
      VAR_INFO(1) = 'ENTER THE NODE IDENTIFICATION FOR THE AREA.';
      VAR_INFO(2) = 'BETWEEN 0 & 9, MAXIMUM LENGTH OF 1:';
      TYPE = REAL;
      FACT_NODEID = PARMGT();
    END;
    ELSE DO;
      INPT_NODEID = '1';
      VAR_INFO(1) = 'ENTER THE NODE IDENTIFICATION MULTIPLIER.';
      VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
      TYPE = REAL;
      FACT_NODEID = PARMGT();
      LEN = 10;
      VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE NODE IDENTIFICATION ';
      VAR_INFO(2) = 'MATRIX INITIALLY SET TO, BETWEEN 0 & 9 ?';
      VAR_INFO(3) = '(MAXIMUM LENGTH OF 1):';
      TYPE = INTEGER;
      LEN = 1;
      REPLY = PARMGT();
      DO I=1 TO TEMP_NUM1;
        DO J=1 TO TEMP_NUM;
          NODEID(J,I) = REPLY;
        END;
      END;
      LEN = 10;
      CALL MTRXED(NODEID,TEMP_NUM1,TEMP_NUM,1);
    END;
    VAR_INFO(1) = 'IS THE CONCENTRATION FOR THE AREA CONSTANT ?';
    VAR_INFO(2) = '(A MATRIX IS NOT REQUIRED IF THE CONCENTRATION';
    VAR_INFO(3) = 'FOR THE AREA IS CONSTANT) (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      INPT_CONC = '0';
      VAR_INFO(1) = 'ENTER THE CONCENTRATION FOR THE AREA (MG/L).';
      VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
      TYPE = REAL;
      LEN = 10;
      FACT_CONC = PARMGT();
    END;
    ELSE DO;
      INPT_CONC = '1';
      VAR_INFO(1) = 'ENTER THE CONCENTRATION MULTIPLIER.';
      VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
      TYPE = REAL;
    LEN = 10;
    FACT_CONC = PARMGT();
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE CONCENTRATION ';
    VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
    VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
    TYPE = REAL;
    LEN = 4;
    REPLY = PARMGT();
    DO I=1 TO TEMP_NUM1;
      DO J=1 TO TEMP_NUM;
        CONC(J,I) = REPLY;
      END;
    END;
    CALL MTRXED(CONC,TEMP_NUM1,TEMP_NUM,4);
  END;
/**************************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.          */
%INCLUDE 'B:PARMGT.PLI';
/**************************************************/
END;
```

APPENDIX I-B

EDITOR ROUTINES

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL                             (UPDATE  )

 UPDATE: PROC;
 /* CONTROLS EDITING OPERATIONS. */
 /* SETS UP JCL FOR IBM 3081.    */
 /****************************************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.                        */
 %INCLUDE 'B:EXTVAR.PLI';
 /****************************************************************/
   DCL EDVAR                       ENTRY,
       SUBFIL                      ENTRY,
       EDMTRX                      ENTRY;
   DCL INPUT                       ENTRY (CHAR(4),CHAR(80) VAR);
   OPEN FILE(SCREEN) STREAM OUTPUT TITLE('$CON');
   OPEN FILE(CRT) INPUT TITLE('$CON');
   PUT FILE(SCREEN) EDIT('ENTER THE DATASET NAME TO BE MODIFIED',
       '(INCLUDE DRIVE IDENTIFIER):')(SKIP(3),A,SKIP,A);
   CALL INPUT('CHAR',FILENM);
   OPEN FILE(SYSUT4) STREAM INPUT TITLE(FILENM) LINESIZE(80);
   CALL EDFILE;
   CALL EDJCL;
   CALL EDVAR;
   CALL EDMTRX;
   OPEN FILE(SYSUT4) STREAM OUTPUT TITLE(FILENM) LINESIZE(80);
   CALL SUBFIL;
   PUT FILE(SCREEN) EDIT('FILE MODIFIED:  ',FILENM)(SKIP,A,A);
 /****************************************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.                        */
 %INCLUDE 'B:EDFILE.PLI';
 %INCLUDE 'B:EDJCL.PLI';
 /****************************************************************/
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                         (UPDATEM )

UPDATEM: PROC;
/* CONTROLS EDITING OPERATIONS.    */
/* SETS UP JCL FOR MICROCOMPUTER.  */
/****************************************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.                        */
%INCLUDE 'B:EXTVAR.PLI';
/****************************************************************/
  DCL EDVAR                        ENTRY,
      SUBFILM                      ENTRY,
      EDMTRX                       ENTRY;
  DCL INPUT                        ENTRY (CHAR(4),CHAR(80) VAR);
  ON UNDEFINEDFILE(SYSUT4) BEGIN;
    PUT FILE(SCREEN) EDIT('FILE DOES NOT EXIST--PLEASE REENTER:')(A);
    GOTO GTFLNM;
  END;
  OPEN FILE(SCREEN) STREAM OUTPUT TITLE('$CON');
  OPEN FILE(CRT) INPUT TITLE('$CON');
  PUT FILE(SCREEN) EDIT('ENTER THE DATASET NAME TO BE MODIFIED',
      '(INCLUDE DRIVE IDENTIFIER):')(SKIP(3),A,SKIP,A);
  GTFLNM:
  CALL INPUT('CHAR',FILENM);
  OPEN FILE(SYSUT4) STREAM INPUT TITLE(FILENM) LINESIZE(80);
  CALL EDFILEM;
  CALL EDJCLM;
  CALL EDVAR;
  CALL EDMTRX;
  OPEN FILE(SYSUT4) STREAM OUTPUT TITLE(FILENM) LINESIZE(80);
  CALL SUBFILM;
  PUT FILE(SCREEN) EDIT('FILE MODIFIED:  ',FILENM)(SKIP,A,A);
/****************************************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.                        */
%INCLUDE 'B:EDFILEM.PLI';
%INCLUDE 'B:EDJCLM.PLI';
/****************************************************************/
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                  (UPDATED )
 UPDATED: PROC;
 /* CONTROLS EDITING OPERATIONS. */
 /* SETS UP JCL FOR DEC/VAX.     */
 /*********************************************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.                             */
 %INCLUDE 'B:EXTVAR.PLI';
 /*********************************************************************/
   DCL EDVAR                         ENTRY,
       SUBFILM                       ENTRY,
       EDMTRX                        ENTRY;
   DCL INPUT                         ENTRY (CHAR(4),CHAR(80) VAR);
   ON UNDEFINEDFILE(SYSUT4) BEGIN;
     PUT FILE(SCREEN) EDIT('FILE DOES NOT EXIST--PLEASE REENTER:')(A);
     GOTO GTFLNM;
   END;
   OPEN FILE(SCREEN) STREAM OUTPUT TITLE('$CON');
   OPEN FILE(CRT) INPUT TITLE('$CON');
   PUT FILE(SCREEN) EDIT('ENTER THE DATASET NAME TO BE MODIFIED:')
                      (SKIP,A);
   GTFLNM:
   CALL INPUT('CHAR',FILENM);
   OPEN FILE(SYSUT4) STREAM INPUT TITLE(FILENM) LINESIZE(80);
   CALL EDFILEM;
   CALL EDJCLD;
   CALL EDVAR;
   CALL EDMTRX;
   OPEN FILE(SYSUT4) STREAM OUTPUT TITLE(FILENM) LINESIZE(80);
   CALL SUBFILM;
   PUT FILE(SCREEN) EDIT('FILE MODIFIED:  ',FILENM)(SKIP,A,A);
 /*********************************************************************/
 /* %INCLUDE REAQUIRES COMPLETE FILE NAME.                            */
 %INCLUDE 'B:EDFILEM.PLI';
 %INCLUDE 'B:EDJCLD.PLI';
 /*********************************************************************/
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                              (EDFILE  )
 EDFILE: PROC;
 /* THE EDFILE SUBROUTINE IS USED TO READ THE FILE TO BE
    EDITED.  READS JCL FOR IBM 3081.  */
   DCL COUNT                               FIXED BIN,
       TEMP_NUM1                           FIXED BIN,
       TEMP_NUM2                           FIXED BIN,
       I                                   FIXED BIN,
       J                                   FIXED BIN,
       K                                   FIXED BIN,
       L                                   FIXED BIN,
       COUNT1                              FIXED BIN;
   DCL DBLANK              ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
   DO I = 1 TO 16;
     GET FILE(SYSUT4) EDIT(JCL(I)) (A(80));
   END;
   GET FILE(SYSUT4) EDIT(TITLE) (COL(1),A(80));
   GET FILE(SYSUT4) EDIT(NTIM(1),NPMP,NX,NY,NPMAX,NPNT(1),NITP(1),
                     NUMOBS,ITMAX(1),NREC(1),NPTPND,NCODES,
                     NPNTMV(1),NPNTVL(1),NPNTD(1),NPDELC(1),NPNCHV(1))
                    (COL(1),17(A(4)));
   GET FILE(SYSUT4) EDIT(PINT(1),TOL,POROS,BETA,S,TIMX(1),TINIT(1),
                     XDEL,YDEL,DLTRAT,CELDIS,ANFCTR)
                    (COL(1),12(A(5)));
   GET FILE(SYSUT4) EDIT(NDECAY,NSORB,DCYTIM,DENROC,SORBQR,SORBST,
                     SORBAL)(COL(1),2(A(5)),5(A(10)));
   GET FILE(SYSUT4) EDIT(ISOLV,IHEAD,FCON,TP,BTM)(COL(1),5(A(4)));
   COUNT = 0;
   TEMP_NUM1 = DBLANK(NUMOBS);
   DO WHILE(COUNT < TEMP_NUM1);
     COUNT = COUNT + 1;
     GET FILE(SYSUT4) EDIT(IXOBS(COUNT),IYOBS(COUNT))
                      (COL(1),2(A(2)));
   END;
   COUNT = 0;
   TEMP_NUM1 = DBLANK(NREC(1));
   DO WHILE(COUNT < TEMP_NUM1);
     COUNT = COUNT + 1;
     GET FILE(SYSUT4) EDIT(IX(1,COUNT),IY(1,COUNT),
                       REC(1,COUNT),CNRECH(1,COUNT))
                      (COL(1),2(A(2)),2(A(8)));
   END;
   GET FILE(SYSUT4) EDIT(INPT_VPRM,FACT_VPRM)
                    (COL(1),A(1),A(10));
   IF INPT_VPRM ¬= 0 THEN DO;
     I = DBLANK(NX);
     J = DBLANK(NY);
     DO K=1 TO J;
       GET FILE(SYSUT4) EDIT(VPRM(K,1)) (COL(1),A(4));
       DO L=2 TO I;
         GET FILE(SYSUT4) EDIT(VPRM(K,L)) (A(4));
       END;
     END;
   END;
   GET FILE(SYSUT4) EDIT(INPT_THCK,FACT_THCK)
                    (COL(1),A(1),A(10));
   IF INPT_THCK ¬= 0 THEN DO;
     I = DBLANK(NX);
     J = DBLANK(NY);
     DO K=1 TO J;
       GET FILE(SYSUT4) EDIT(THCK(K,1)) (COL(1),A(3));
       DO L=2 TO I;
         GET FILE(SYSUT4) EDIT(THCK(K,L)) (A(3));
    END;
  END;
END;
GET FILE(SYSUT4) EDIT(INPT_WT,FACT_WT)
                 (COL(1),A(1),A(10));
IF INPT_WT ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(WT(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(WT(K,L)) (A(4));
    END;
  END;
END;
GET FILE(SYSUT4) EDIT(INPT_RECH,FACT_RECH)
                 (COL(1),A(1),A(10));
IF INPT_RECH ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(RECH(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(RECH(K,L)) (A(4));
    END;
  END;
END;
GET FILE(SYSUT4) EDIT(INPT_NODEID,FACT_NODEID)
                 (COL(1),A(1),A(10));
IF INPT_NODEID ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(NODEID(K,1)) (COL(1),A(1));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(NODEID(K,L)) (A(1));
    END;
  END;
END;
COUNT = 0;
TEMP_NUM1 = DBLANK(NCODES);
DO WHILE(COUNT < TEMP_NUM1);
  COUNT = COUNT + 1;
  GET FILE(SYSUT4) EDIT(ICODE(COUNT),FCTR1(COUNT),FCTR2(COUNT),
                   FCTR3(COUNT),OVERRD(COUNT))
                  (COL(1),A(2),3(A(10)),A(2));
END;
GET FILE(SYSUT4) EDIT(INPT_CONC,FACT_CONC)
                 (COL(1),A(1),A(10));
IF INPT_CONC ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(CONC(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(CONC(K,L)) (A(4));
    END;
  END;
END;
COUNT = 1 ;
TEMP_NUM1 = DBLANK(NPMP);
DO WHILE(COUNT < TEMP_NUM1);
  COUNT = COUNT + 1;
  GET FILE(SYSUT4) EDIT(ICHK(COUNT-1)) (COL(1),A(1));
  IF ICHK(COUNT-1) = 1 THEN DO;
    GET FILE(SYSUT4) EDIT(NTIM(COUNT),NPNT(COUNT),NITP(COUNT),
                         ITMAX(COUNT),
                         NREC(COUNT),NPNTMV(COUNT),NPNTVL(COUNT),
                         NPNTD(COUNT),NPDELC(COUNT),NPNCHV(COUNT),
                         PINT(COUNT),TIMX(COUNT),TINIT(COUNT))
                        (COL(1),10(A(4)),3(A(5)));
      COUNT1 = 0;
      TEMP_NUM2 = DBLANK(NREC(COUNT));
      DO WHILE(COUNT1 < NREC(COUNT));
        COUNT1 = COUNT1 + 1;
        GET FILE(SYSUT4) EDIT(IX(COUNT,COUNT1),IY(COUNT,COUNT1),
                          REC(COUNT,COUNT1),CNRECH(COUNT,COUNT1))
                         (COL(1),2(A(2)),2(A(8)));
      END;
    END;
  END;
  CLOSE FILE(SYSUT4);
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL                                         (EDFILEM )

 EDFILEM: PROC;
 /* THE EDFILE SUBROUTINE IS USED TO READ THE FILE TO BE
    EDITED FOR EXECUTIONS ON MICROCOMPUTERS. */
   DCL COUNT                          FIXED BIN,
       TEMP_NUM1                      FIXED BIN,
       TEMP_NUM2                      FIXED BIN,
       I                              FIXED BIN,
       J                              FIXED BIN,
       K                              FIXED BIN,
       L                              FIXED BIN,
       COUNT1                         FIXED BIN;
   DCL DBLANK               ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
   GET FILE(SYSUT4) EDIT(TITLE) (COL(1),A(80));
   GET FILE(SYSUT4) EDIT(NTIM(1),NPMP,NX,NY,NPMAX,NPNT(1),NITP(1),
                     NUMOBS,ITMAX(1),NREC(1),NPTPND,NCODES,
                     NPNTMV(1),NPNTVL(1),NPNTD(1),NPDELC(1),NPNCHV(1))
                    (COL(1),17(A(4)));
   GET FILE(SYSUT4) EDIT(PINT(1),TOL,POROS,BETA,S,TIMX(1),TINIT(1),
                     XDEL,YDEL,DLTRAT,CELDIS,ANFCTR)
                    (COL(1),12(A(5)));
   GET FILE(SYSUT4) EDIT(NDECAY,NSORB,DCYTIM,DENROC,SORBOR,SORBST,
                     SORBAL)(COL(1),2(A(5)),5(A(10)));
   GET FILE(SYSUT4) EDIT(ISOLV,IHEAD,FCON,TP,BTM)(COL(1),5(A(4)));
   COUNT = 0;
   TEMP_NUM1 = DBLANK(NUMOBS);
   DO WHILE(COUNT < TEMP_NUM1);
     COUNT = COUNT + 1;
     GET FILE(SYSUT4) EDIT(IXOBS(COUNT),IYOBS(COUNT))
                      (COL(1),2(A(2)));
   END;
   COUNT = 0;
   TEMP_NUM1 = DBLANK(NREC(1));
   DO WHILE(COUNT < TEMP_NUM1);
     COUNT = COUNT + 1;
     GET FILE(SYSUT4) EDIT(IX(1,COUNT),IY(1,COUNT),
                        REC(1,COUNT),CNRECH(1,COUNT))
                      (COL(1),2(A(2)),2(A(8)));
   END;
   GET FILE(SYSUT4) EDIT(INPT_VPRM,FACT_VPRM)
                    (COL(1),A(1),A(10));
   IF INPT_VPRM ¬= 0 THEN DO;
     I = DBLANK(NX);
     J = DBLANK(NY);
     DO K=1 TO J;
       GET FILE(SYSUT4) EDIT(VPRM(K,1)) (COL(1),A(4));
       DO L=2 TO I;
         GET FILE(SYSUT4) EDIT(VPRM(K,L)) (A(4));
       END;
     END;
   END;
   GET FILE(SYSUT4) EDIT(INPT_THCK,FACT_THCK)
                    (COL(1),A(1),A(10));
   IF INPT_THCK ¬= 0 THEN DO;
     I = DBLANK(NX);
     J = DBLANK(NY);
     DO K=1 TO J;
       GET FILE(SYSUT4) EDIT(THCK(K,1)) (COL(1),A(3));
       DO L=2 TO I;
         GET FILE(SYSUT4) EDIT(THCK(K,L)) (A(3));
       END;
     END;
   END;
```

```
GET FILE(SYSUT4) EDIT(INPT_WT,FACT_WT)
                 (COL(1),A(1),A(10));
IF INPT_WT ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(WT(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(WT(K,L)) (A(4));
    END;
  END;
END;
GET FILE(SYSUT4) EDIT(INPT_RECH,FACT_RECH)
                 (COL(1),A(1),A(10));
IF INPT_RECH ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(RECH(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(RECH(K,L)) (A(4));
    END;
  END;
END;
GET FILE(SYSUT4) EDIT(INPT_NODEID,FACT_NODEID)
                 (COL(1),A(1),A(10));
IF INPT_NODEID ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(NODEID(K,1)) (COL(1),A(1));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(NODEID(K,L)) (A(1));
    END;
  END;
END;
COUNT = 0;
TEMP_NUM1 = DBLANK(NCODES);
DO WHILE(COUNT < TEMP_NUM1);
  COUNT = COUNT + 1;
  GET FILE(SYSUT4) EDIT(ICODE(COUNT),FCTR1(COUNT),FCTR2(COUNT),
                    FCTR3(COUNT),OVERRD(COUNT))
                   (COL(1),A(2),3(A(10)),A(2));
END;
GET FILE(SYSUT4) EDIT(INPT_CONC,FACT_CONC)
                 (COL(1),A(1),A(10));
IF INPT_CONC ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    GET FILE(SYSUT4) EDIT(CONC(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      GET FILE(SYSUT4) EDIT(CONC(K,L)) (A(4));
    END;
  END;
END;
COUNT = 1 ;
TEMP_NUM1 = DBLANK(NPMP);
DO WHILE(COUNT < TEMP_NUM1);
  COUNT = COUNT + 1;
  GET FILE(SYSUT4) EDIT(ICHK(COUNT-1)) (COL(1),A(1));
  IF ICHK(COUNT-1) = 1 THEN DO;
    GET FILE(SYSUT4) EDIT(NTIM(COUNT),NPNT(COUNT),NITP(COUNT),
                      ITMAX(COUNT),
                      NREC(COUNT),NPNTMV(COUNT),NPNTVL(COUNT),
                      NPNTD(COUNT),NPDELC(COUNT),NPNCHV(COUNT),
                       PINT(COUNT),TIMX(COUNT),TINIT(COUNT))
                      (COL(1),10(A(4)),3(A(5)));
      COUNT1 = 0;
      TEMP_NUM2 = DBLANK(NREC(COUNT));
      DO WHILE(COUNT1 < NREC(COUNT));
        COUNT1 = COUNT1 + 1;
        GET FILE(SYSUT4) EDIT(IX(COUNT,COUNT1),IY(COUNT,COUNT1),
                         REC(COUNT,COUNT1),CNRECH(COUNT,COUNT1))
                        (COL(1),2(A(2)),2(A(8)));
      END;
    END;
  END;
  CLOSE FILE(SYSUT4);
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                   (EDJCL    )
 EDJCL: PROC ;
 /* THE EDJCL SUBROUTINE IS USED TO EDIT THE IBM 3081 JCL FOR THE MODEL.
 */
   DCL ANSWER                        CHAR(80) VAR,
       ANSWER1                       CHAR(80) VAR,
       I                             FIXED BIN;
   DCL INPUT                         ENTRY (CHAR(4),CHAR(80) VAR),
       INPUTR              ENTRY (CHAR(4),CHAR(80) VAR,FLOAT,FLOAT),
       DBLANK              ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
     PUT FILE(SCREEN) EDIT
       ('NOTE:  CHECK THE "DISP" ATTRIBUTE FOR THE OUTLIST AND ',
        'GRAPH FILES.') (SKIP,A,A,SKIP,A);
     ANSWER = 'Y';
     DO WHILE(ANSWER = 'Y');
     PUT FILE(SCREEN) EDIT
       ('THE FOLLOWING IS THE JCL') (SKIP,A);
     DO I=1 TO 16 ;
       PUT FILE(SCREEN) EDIT
         ('  ',I,') ',JCL(I)) (SKIP,A,F(2),A,A(70));
     END;
     PUT FILE(SCREEN) EDIT
       ('DO YOU WISH TO CHANGE ANYTHING (Y/N) :') (SKIP,A);
     CALL INPUT('ANS',ANSWER);
     IF ANSWER = 'Y' THEN DO;
       PUT FILE(SCREEN) EDIT
         ('ENTER THE NUMBER OF THE LINE YOU WISH TO CHANGE.',
          '(ONLY ONE AT A TIME):') (A,SKIP,A);
       CALL INPUTR('INT',ANSWER1,1,15);
       I=DBLANK(ANSWER1);
       PUT FILE(SCREEN) EDIT(JCL(I),'ENTER THE COMPLETE LINE . . .:')
         (SKIP,A(72),SKIP,A,SKIP,A);
       CALL INPUT('CHAR',JCL(I));
     END;
   END;
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                          (EDJCLM   )
 EDJCLM: PROC ;
 /* THE EDJCL SUBROUTINE IS USED TO EDIT THE MICROCOMPUTER
    JCL FOR THE MODEL. */
   DCL ANSWER                          CHAR(80) VAR,
       ANSWER1                         CHAR(80) VAR,
       I,II                            FIXED BIN;
   DCL INPUT                           ENTRY (CHAR(4),CHAR(80) VAR);
   ON UNDEFINEDFILE(JCLF) BEGIN;
     JCL(1)='A:KONIMOD B:FILE.LST,' || FILENM || 'B:FILE.GRF';
     GO TO EDITJCL;
   END;
     I=LENGTH(FILENM);
     DO WHILE ((SUBSTR(FILENM,I,1) ¬= '.') & (I>0));
       I=I-1;
     END;
     IF I=0 THEN ANSWER1=FILENM || '.BAT';
     ELSE ANSWER1 = SUBSTR(FILENM,1,I) || 'BAT';
     OPEN FILE(JCLF) STREAM INPUT TITLE(ANSWER1) LINESIZE(80);
     GET FILE(JCLF) EDIT(JCL(1)) (COL(1),A(80));
     CLOSE FILE(JCLF);
   EDITJCL:
     ANSWER = 'Y';
     DO WHILE (ANSWER = 'Y');
     PUT FILE(SCREEN) EDIT
       ('THE FOLLOWING IS THE JCL') (SKIP,A);
     PUT FILE(SCREEN) EDIT (JCL(1)) (SKIP,A(72));
     PUT FILE(SCREEN) EDIT
       ('DO YOU WISH TO CHANGE ANYTHING (Y/N) :') (SKIP,A);
     CALL INPUT('ANS',ANSWER);
     IF ANSWER = 'Y' THEN DO;
       PUT FILE(SCREEN) EDIT(JCL(1),'ENTER THE COMPLETE LINE . . .:')
         (SKIP,A(72),SKIP,A,SKIP,A);
       CALL INPUT('CHAR',JCL(1));
     END;
   END;
   OPEN FILE(JCLF) STREAM OUTPUT TITLE(ANSWER1) LINESIZE(80);
   PUT FILE(JCLF) EDIT(JCL(1)) (COL(1),A(80));
   CLOSE FILE(JCLF);
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL                                    (EDJCLD   )

 EDJCLD: PROC ;
 /* THE EDJCLD SUBROUTINE IS USED TO EDIT THE DEC/VAX JCL FOR THE MODEL.
 */
   DCL ANSWER                        CHAR(80) VAR,
       ANSWER1                       CHAR(80) VAR,
       I                             FIXED BIN;
   DCL INPUT                         ENTRY (CHAR(4),CHAR(80) VAR),
       INPUTR              ENTRY (CHAR(4),CHAR(80) VAR,FLOAT,FLOAT),
       DBLANK              ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
   ON UNDEFINEDFILE(JCLF) BEGIN;
     JCL(1)='$ DEFINE FOR005';
     JCL(2)='$ DEFINE FOR006';
     JCL(3)='$ DEFINE FOR010';
     JCL(4)='$ RUN KONIMOD.EXE';
     GO TO EDITJCL;
   END;
     I=LENGTH(FILENM);
     DO WHILE ((SUBSTR(FILENM,I,1)¬= '.') & (I>0));
       I=I-1;
     END;
     IF I=0 THEN ANSWER1=FILENM || '.COM';
     ELSE ANSWER1=SUBSTR(FILENM,1,I) || 'COM';
     OPEN FILE(JCLF) STREAM INPUT TITLE(ANSWER1) LINESIZE(80);
     DO I=1 TO 4;
       GET FILE(JCLF) EDIT(JCL(I)) (COL(1),A(80));
     END;
     CLOSE FILE(JCLF);
   EDITJCL:
     ANSWER = 'Y';
     DO WHILE(ANSWER = 'Y');
     PUT FILE(SCREEN) EDIT
       ('THE FOLLOWING IS THE JCL') (SKIP,A);
     DO I=1 TO 4 ;
       PUT FILE(SCREEN) EDIT
         ('  ',I,') ',JCL(I)) (SKIP,A,F(2),A,A(80));
     END;
     PUT FILE(SCREEN) EDIT
       ('DO YOU WISH TO CHANGE ANYTHING (Y/N) :') (SKIP,A);
     CALL INPUT('ANS',ANSWER);
     IF ANSWER = 'Y' THEN DO;
       PUT FILE(SCREEN) EDIT
         ('ENTER THE NUMBER OF THE LINE YOU WISH TO CHANGE.',
          '(ONLY ONE AT A TIME):') (A,SKIP,A);
       CALL INPUTR('INT',ANSWER1,1,4);
       I=DBLANK(ANSWER1);
       PUT FILE(SCREEN) EDIT(JCL(I),'ENTER THE COMPLETE LINE . . .:')
         (SKIP,A(80),SKIP,A,SKIP,A);
       CALL INPUT('CHAR',JCL(I));
     END;
   END;
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL                                   (EDVAR    )

 EDVAR: PROC;
 /* THE EDVAR SUBROUTINE PROMPTS FOR THE CHANGES TO THE
    SINGLE VARIABLES.
 */
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.           */
 %INCLUDE 'B:EXTVAR.PLI';
 /**********************************************/
   DCL CHARACTER                 CHAR(4) STATIC INIT('CHAR'),
       INTEGER                   CHAR(4) STATIC INIT('INT '),
       REAL                      CHAR(4) STATIC INIT('REAL'),
       NUMBER                    CHAR(4) STATIC INIT('NUM '),
       ANSWER                    CHAR(4) STATIC INIT('ANS '),
       TYPE                      CHAR(4) STATIC INIT(''),
       REPLY                     CHAR(80) VAR,
       UPPER_RANGE               FLOAT STATIC INIT(0),
       LOWER_RANGE               FLOAT STATIC INIT(0),
       LEN                       FIXED BIN STATIC INIT(4),
       VAR_INFO(10)              CHAR(80) VAR,
       NUMBER1                   FLOAT STATIC INIT(0),
       NUMBER2                   FLOAT STATIC INIT(0),
       OLDNUM                    FIXED BIN,
       COUNTER                   FIXED BIN,
       COUNTER1                  FIXED BIN,
       PMP                       CHAR(80) VAR,
       TEMPC                     CHAR(80) VAR,
       TEMPCC                    CHAR(80) VAR,
       TEMPN                     FLOAT STATIC INIT(0);
  DCL DBLANK         ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
  DO COUNTER = 1 TO 10;
    VAR_INFO(COUNTER) = '';
  END;
  VERIFY=0;
  VAR_INFO(1) = 'DO YOU WISH TO CHANGE ANY OF THE SINGLE VARIABLES ?' ;
  VAR_INFO(2) = 'ANYTHING OTHER THAN MATRICES (Y/N):';
  TYPE = ANSWER;
  LEN = 1;
  TEMPC = PARMGT();
  IF TEMPC = 'N' THEN GO TO NDVAR;
  VAR_INFO(1) = 'TITLE = ';
  VAR_INFO(2) = TITLE ;
  VAR_INFO(3) = 'CHANGE (Y/N):';
  TYPE = ANSWER;
  LEN = 1;
  TEMPC = PARMGT();
  IF TEMPC = 'Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:' ;
    LEN = 80 ;
    TYPE = CHARACTER;
    TITLE = PARMGT();
  END;
  VAR_INFO(1) = 'NX = ' || NX ;
  VAR_INFO(2) = 'MINIMUM OF 3, MAXIMUM OF '||NX_LMT||'.';
  VAR_INFO(3) = 'CHANGE (Y/N):';
  TYPE = ANSWER;
  LEN = 1;
  TEMPC = PARMGT();
  IF TEMPC = 'Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:' ;
    LOWER_RANGE = 3;
    UPPER_RANGE = NX_LMT;
    LEN = 4;
  TYPE = INTEGER;
  NX = PARMGT();
END;
VAR_INFO(1) = 'NY = ' || NY ;
VAR_INFO(2) = 'MINIMUM OF 3, MAXIMUM OF '||NY_LMT||'.';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LOWER_RANGE = 3;
  UPPER_RANGE = NY_LMT;
  LEN = 4;
  TYPE = INTEGER;
  NY = PARMGT();
END;
VAR_INFO(1) = 'NPMAX = ' || NPMAX ;
VAR_INFO(2) = 'MAXIMUM OF 3200.';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  UPPER_RANGE = 3200;
  NPMAX = PARMGT();
END;
VAR_INFO(1) = 'NPTPND = ' || NPTPND ;
VAR_INFO(2) = 'OPTIONS = 4,5,8,9:';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  NPTPND = PARMGT();
END;
VAR_INFO(1) = 'NUMOBS = ' || NUMOBS ;
VAR_INFO(2) = 'MAXIMUM OF '||OBS_LMT||'.';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
OLDNUM = NUMOBS;
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  UPPER_RANGE = OBS_LMT;
  NUMOBS = PARMGT();
END;
NUMBER1 = NUMOBS;
IF NUMBER1 > OLDNUM THEN DO;
  COUNTER = OLDNUM;
  DO WHILE(COUNTER < NUMBER1);
    COUNTER = COUNTER + 1;
    TEMPC = COUNTER;
    TEMPC = DBLANK(TEMPC);
    VAR_INFO(1) =
      'ENTER THE "X" COORDINATE OF OBSERVATION POINT '||TEMPC||'.';
    VAR_INFO(2) = 'VARIABLE "IXOBS(' || TEMPC || ')" :' ;
```

```
        LEN = 2;
        IXOBS(COUNTER) = PARMGT();
        VAR_INFO(1) =
          'ENTER THE "Y" COORDINATE OF OBSERVATION POINT '||TEMPC||'.';
        VAR_INFO(2) = 'VARIABLE "IYOBS(' || TEMPC || ')" :' ;
        IYOBS(COUNTER) = PARMGT();
      END;
    END;
    DO WHILE((OLDNUM > -1) & (NUMBER1 > 0));
      COUNTER = 0;
      PUT FILE(SCREEN) EDIT('OBSERVATION WELLS')(A);
      PUT FILE(SCREEN) EDIT('  WELL#    X    Y ')(SKIP,A);
      DO WHILE(COUNTER < NUMBER1);
        COUNTER = COUNTER + 1;
        IF OLDNUM < COUNTER THEN PUT FILE(SCREEN) EDIT('NEW')(SKIP,A);
        PUT FILE(SCREEN) EDIT(COUNTER,IXOBS(COUNTER),IYOBS(COUNTER))
                (SKIP,X(4),F(3),X(2),A(2),X(2),A(2));
      END;
      VAR_INFO(1) = 'ENTER WELL NUMBER (OR 0 TO CONTINUE):';
      LEN = 2;
      TYPE = INTEGER;
      TEMPCC = PARMGT();
      COUNTER = TEMPCC;
      IF COUNTER > 0 THEN DO;
        VAR_INFO(1) = 'IXOBS(' || TEMPCC || ') = ' || IXOBS(COUNTER) ;
        VAR_INFO(2) = 'CHANGE (Y/N):';
        TYPE = ANSWER;
        LEN = 1;
        TEMPC = PARMGT();
        IF TEMPC = 'Y' THEN DO;
          VAR_INFO(1) = 'ENTER NEW VALUE:' ;
          LEN = 2;
          TYPE = INTEGER;
          IXOBS(COUNTER) = PARMGT();
        END;
        VAR_INFO(1) = 'IYOBS(' || TEMPCC || ') = ' || IYOBS(COUNTER) ;
        VAR_INFO(2) = 'CHANGE (Y/N):';
        TYPE = ANSWER;
        LEN = 1;
        TEMPC = PARMGT();
        IF TEMPC = 'Y' THEN DO;
          VAR_INFO(1) = 'ENTER NEW VALUE:' ;
          LEN = 2;
          TYPE = INTEGER;
          IYOBS(COUNTER) = PARMGT();
        END;
      END;
      ELSE OLDNUM = -1;
    END;
  VAR_INFO(1) = 'NCODES = ' || NCODES ;
  VAR_INFO(2) = 'MAXIMUM OF '||NC_LMT||'.';
  VAR_INFO(3) = 'CHANGE (Y/N):';
  TYPE = ANSWER;
  LEN = 1;
  TEMPC = PARMGT();
  OLDNUM = NCODES;
  IF TEMPC = 'Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:' ;
    LEN = 4;
    UPPER_RANGE = NC_LMT;
    TYPE = INTEGER;
    NCODES = PARMGT();
  END;
  NUMBER2 = NCODES;
  IF NUMBER2 > OLDNUM THEN DO;
    COUNTER1 = OLDNUM + 1;
  DO WHILE(COUNTER1 <= NUMBER2);
    TEMPC = COUNTER1;
    TEMPC = DBLANK(TEMPC);
    VAR_INFO(1) = 'ENTER NODE IDENTIFICATION CODE ' ||TEMPC|| '.';
    VAR_INFO(2) = 'VARIABLE "ICODE(' || TEMPC || ')" :';
    LEN = 2;
    TYPE = INTEGER;
    ICODE(COUNTER1) = PARMGT();
    VAR_INFO(1) = 'ENTER CORRESPONDING LEAKANCE (FT**2/SEC).';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
    VAR_INFO(3) = 'NOTE:  FT**2/SEC = GPD/FT * 1.54723 E-6';
    VAR_INFO(4) = 'VARIABLE "FCTR1(' || TEMPC || ')" :';
    LEN = 10;
    TYPE = REAL;
    FCTR1(COUNTER1) = PARMGT();
    VAR_INFO(1) =
      'ENTER CONCENTRATION (MG/L) FOR ICODE ' ||TEMPC|| '.';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
    VAR_INFO(3) = 'VARIABLE "FCTR2(' || TEMPC || ')" :';
    FCTR2(COUNTER1) = PARMGT();
    VAR_INFO(1) = 'ENTER OPTION TO RETAIN RECHARGE MATRIX VALUES :';
    VAR_INFO(2) = '  0) RETAIN VALUES.';
    VAR_INFO(3) = '  1) USE VALUE OF FCTR3.';
    VAR_INFO(4) = 'VARIABLE "OVERRD(' || TEMPC || ')" :';
    LEN = 2;
    TYPE = INTEGER;
    OVERRD(COUNTER1) = PARMGT();
    IF ( OVERRD(COUNTER1)=' 0' )
    THEN FCTR3(COUNTER1)='          0.';
    ELSE DO ;
      VAR_INFO(1) =
        'ENTER RECHARGE/DISCHARGE (FT/SEC) FOR ICODE '||TEMPC||'.';
      VAR_INFO(2) = 'NEGATIVE FOR RECHARGE, POSITIVE FOR DISCHARGE.';
      VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
      VAR_INFO(4) = 'NOTE:  FT/SEC = IN/YR * 26.7918 E-10';
      VAR_INFO(5) = 'ENTER VARIABLE "FCTR3(' || TEMPC || ')" :';
      LEN = 10;
      TYPE = REAL;
      FCTR3(COUNTER1) = PARMGT();
    END;
    COUNTER1 = COUNTER1 + 1;
  END;
END;
DO WHILE((OLDNUM > -1) & (NUMBER2 > 0));
  COUNTER1 = 1;
  PUT FILE(SCREEN) EDIT('NODEID CODES')(X(18),A);
  PUT FILE(SCREEN) EDIT
  ('  ICODE#  ICODE       FCTR1       FCTR2       FCTR3   OVERRD')
  (SKIP,A);
  DO WHILE(COUNTER1 <= NUMBER2);
    IF OLDNUM < COUNTER1 THEN PUT FILE(SCREEN) EDIT('NEW')(SKIP,A);
    PUT FILE(SCREEN) EDIT(COUNTER1,ICODE(COUNTER1),FCTR1(COUNTER1),
     FCTR2(COUNTER1),FCTR3(COUNTER1),OVERRD(COUNTER1)) (SKIP,X(6),
     F(2),X(5),A(2),3(X(1),A(10)),X(7),A(2));
    COUNTER1 = COUNTER1 + 1;
  END;
  VAR_INFO(1) = 'ENTER ICODE NUMBER (OR 0 TO CONTINUE):';
  LEN = 2;
  TYPE = INTEGER;
  TEMPCC = PARMGT();
  COUNTER1 = TEMPCC;
  IF COUNTER1 > 0 THEN DO;
    VAR_INFO(1) = 'ICODE(' || TEMPCC || ') = ' || ICODE(COUNTER1) ;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    LEN = 1;
    TEMPC = PARMGT();
    IF TEMPC = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:' ;
      LEN = 2;
      TYPE = INTEGER;
      ICODE(COUNTER1) = PARMGT();
    END;
    VAR_INFO(1) = 'FCTR1(' || TEMPCC || ') = ' || FCTR1(COUNTER1) ;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    LEN = 1;
    TEMPC = PARMGT();
    IF TEMPC = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:' ;
      LEN = 10;
      TYPE = REAL;
      FCTR1(COUNTER1) = PARMGT();
    END;
    VAR_INFO(1) = 'FCTR2(' || TEMPCC || ') = ' || FCTR2(COUNTER1) ;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    LEN = 1;
    TEMPC = PARMGT();
    IF TEMPC = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:' ;
      LEN = 10;
      TYPE = REAL;
      FCTR2(COUNTER1) = PARMGT();
    END;
    VAR_INFO(1) = 'OVERRD(' || TEMPCC || ') = ' || OVERRD(COUNTER1);
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    LEN = 1;
    TEMPC = PARMGT();
    IF TEMPC = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:' ;
      LEN = 2;
      TYPE = INTEGER;
      OVERRD(COUNTER1) = PARMGT();
    END;
    IF ( OVERRD(COUNTER1)=' O' )
    THEN FCTR3(COUNTER1)='         O.';
    ELSE DO ;
      VAR_INFO(1) = 'FCTR3(' || TEMPCC || ') = ' || FCTR3(COUNTER1);
      VAR_INFO(2) =
      'NEGATIVE FOR RECHARGE, POSITIVE FOR DISCHARGE.';
      VAR_INFO(3) = 'CHANGE (Y/N):';
      TYPE = ANSWER;
      LEN = 1;
      TEMPC = PARMGT();
      IF TEMPC = 'Y' THEN DO;
        VAR_INFO(1) = 'ENTER NEW VALUE:' ;
        LEN = 10;
        TYPE = REAL;
        FCTR3(COUNTER1) = PARMGT();
      END;
    END;
  END;
  ELSE OLDNUM = -1;
END;
VAR_INFO(1) = 'S = ' || S ;
VAR_INFO(2) = '0 FOR STEADY FLOW PROBLEMS.';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
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IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  S = PARMGT();
END;
VAR_INFO(1) = 'NPMP = ' || NPMP ;
VAR_INFO(2) = 'MAXIMUM OF '||PMP_LMT||'.';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  UPPER_RANGE = PMP_LMT;
  LEN = 4;
  TYPE = INTEGER;
  NPMP = PARMGT() ;
END;
COUNTER1 = 1;
NUMBER2 = NPMP;
DO WHILE(COUNTER1 = 1 | COUNTER1 <= NUMBER2 );
  PMP = COUNTER1;
  PMP = DBLANK(PMP);
  IF COUNTER1 > 1 THEN DO;
    VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
    VAR_INFO(2) = 'ICHK = ' || ICHK(COUNTER1-1);
    VAR_INFO(3) = 'CHANGE (Y/N):';
    LEN = 1;
    TYPE = ANSWER;
    TEMPC = PARMGT();
    TEMPCC = ICHK(COUNTER1-1);
    IF TEMPC = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:' ;
      TYPE = INTEGER;
      ICHK(COUNTER1 - 1) = PARMGT();
    END;
    IF TEMPCC = '0' /* | TEMPCC = ''*/  THEN DO;
      NTIM(COUNTER1)='    0';
      NPNT(COUNTER1)='    0';
      NITP(COUNTER1)='    0';
      ITMAX(COUNTER1)='    0';
      NREC(COUNTER1)='    0';
      NPNTMV(COUNTER1)='    0';
      NPNTVL(COUNTER1)='    0';
      NPNTD(COUNTER1)='    0';
      NPDELC(COUNTER1)='    0';
      NPNCHV(COUNTER1)='    0';
      PINT(COUNTER1)='    0.';
      TIMX(COUNTER1)='    0.';
      TINIT(COUNTER1)='    0.';
  END;
END;
IF COUNTER1 = 1  | ICHK(COUNTER1 - 1) = '1' THEN DO;
  VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
  VAR_INFO(2) = 'NTIM = ' || NTIM(COUNTER1) ;
  VAR_INFO(3) = 'CHANGE (Y/N):';
  LEN = 1;
  TYPE = ANSWER;
  TEMPC = PARMGT();
  IF TEMPC = 'Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:' ;
    UPPER_RANGE = 100;
    LEN = 4;
    TYPE = INTEGER;
    NTIM(COUNTER1) = PARMGT();
```

```
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'NPNT = ' || NPNT(COUNTER1) ;
VAR_INFO(3) = 'CHANGE (Y/N):';
LEN = 1;
TYPE = ANSWER;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  NPNT(COUNTER1) = PARMGT();
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'NITP = ' || NITP(COUNTER1) ;
VAR_INFO(3) = 'CHANGE (Y/N):';
LEN = 1;
TYPE = ANSWER;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  NITP(COUNTER1) = PARMGT();
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'ITMAX = ' || ITMAX(COUNTER1) ;
VAR_INFO(3) = 'CHANGE (Y/N):';
LEN = 1;
TYPE = ANSWER;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  ITMAX(COUNTER1) = PARMGT();
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'NPNTMV = ' || NPNTMV(COUNTER1) ;
VAR_INFO(3) = 'CHANGE (Y/N):';
LEN = 1;
TYPE = ANSWER;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  NPNTMV(COUNTER1) = PARMGT();
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'NPNTVL = ' || NPNTVL(COUNTER1) ;
VAR_INFO(3) = 'CHANGE (Y/N):';
LEN = 1;
TYPE = ANSWER;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 4;
  TYPE = INTEGER;
  UPPER_RANGE = 2;
  NPNTVL(COUNTER1) = PARMGT();
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'NPNTD = ' || NPNTD(COUNTER1) ;
VAR_INFO(3) = 'CHANGE (Y/N):';
LEN = 1;
```

```
 TYPE = ANSWER;
 TEMPC = PARMGT();
 IF TEMPC = 'Y' THEN DO;
   VAR_INFO(1) = 'ENTER NEW VALUE:' ;
   LEN = 4;
   TYPE = INTEGER;
   UPPER_RANGE = 2;
   NPNTD(COUNTER1) = PARMGT();
 END;
 VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
 VAR_INFO(2) = 'NPDELC = ' || NPDELC(COUNTER1) ;
 VAR_INFO(3) = 'CHANGE (Y/N):';
 LEN = 1;
 TYPE = ANSWER;
 TEMPC = PARMGT();
 IF TEMPC = 'Y' THEN DO;
   VAR_INFO(1) = 'ENTER NEW VALUE:' ;
   LEN = 4;
   TYPE = INTEGER;
   UPPER_RANGE = 1;
   NPDELC(COUNTER1) = PARMGT();
 END;
 VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
 VAR_INFO(2) = 'NPNCHV = ' || NPNCHV(COUNTER1) ;
 VAR_INFO(3) = 'CHANGE (Y/N):';
 LEN = 1;
 TYPE = ANSWER;
 TEMPC = PARMGT();
 IF TEMPC = 'Y' THEN DO;
   VAR_INFO(1) = 'ENTER NEW VALUE:' ;
   LEN = 4;
   TYPE = INTEGER;
   UPPER_RANGE = 2;
   NPNCHV(COUNTER1) = PARMGT();
 END;
 VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
 VAR_INFO(2) = 'PINT = ' || PINT(COUNTER1) ;
 VAR_INFO(3) = 'CHANGE (Y/N):';
 LEN = 1;
 TYPE = ANSWER;
 TEMPC = PARMGT();
 IF TEMPC = 'Y' THEN DO;
   VAR_INFO(1) = 'ENTER NEW VALUE:' ;
   TYPE = REAL;
   LEN = 5;
   PINT(COUNTER1) = PARMGT();
 END;
 NUMBER1 = S;
 IF NUMBER1 ¬= 0 THEN DO;
   VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
   VAR_INFO(2) = 'TIMX = ' || TIMX(COUNTER1) ;
   VAR_INFO(3) = 'NOTE: MUST BE NONZERO.' ;
   VAR_INFO(4) = 'CHANGE (Y/N):';
   LEN = 1;
   TYPE = ANSWER;
   TEMPC = PARMGT();
   IF TEMPC = 'Y' THEN DO;
     VAR_INFO(1) = 'ENTER NEW VALUE:' ;
     TYPE = REAL;
     LEN = 5;
     TIMX(COUNTER1) = PARMGT();
   END;
   VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
   VAR_INFO(2) = 'TINIT = ' || TINIT(COUNTER1) ;
   VAR_INFO(3) = 'NOTE: MUST BE NONZERO.' ;
   VAR_INFO(4) = 'CHANGE (Y/N):';
```

```
  LEN = 1;
  TYPE = ANSWER;
  TEMPC = PARMGT();
  IF TEMPC = 'Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:' ;
    TYPE = REAL;
    LEN = 5;
    TINIT(COUNTER1) = PARMGT();
  END;
END;
ELSE DO;
  TIMX(COUNTER1) = '   0';
  TINIT(COUNTER1) = '    0';
END;
VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
VAR_INFO(2) = 'NREC = ' || NREC(COUNTER1) ;
VAR_INFO(3) = 'MAXIMUM OF '||NR_LMT||'.';
VAR_INFO(4) = 'CHANGE (Y/N):';
LEN = 1;
TYPE = ANSWER;
TEMPC = PARMGT();
OLDNUM = NREC(COUNTER1);
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  UPPER_RANGE = NR_LMT;
  LEN = 4;
  TYPE = INTEGER;
  NREC(COUNTER1) = PARMGT();
END;
NUMBER1 = NREC(COUNTER1);
IF NUMBER1 > OLDNUM THEN DO;
  COUNTER = OLDNUM;
  DO WHILE(COUNTER < NUMBER1);
    COUNTER = COUNTER + 1;
    TEMPC = COUNTER;
    TEMPC = DBLANK(TEMPC);
    VAR_INFO(1) =
    'ENTER THE X COORDINATE OF PUMPING OR INJECTION WELL '
    || TEMPC || '.' ;
    VAR_INFO(2) = 'VARIABLE "IX(' || TEMPC || ')" :';
    LEN = 2;
    TYPE = INTEGER;
    IX(COUNTER1,COUNTER) = PARMGT();
    VAR_INFO(1) =
    'ENTER THE Y COORDINATE OF THE PUMPING OR INJECTION WELL '
     ||TEMPC|| '.' ;
    VAR_INFO(2) = 'VARIABLE "IY(' || TEMPC || ')" :';
    IY(COUNTER1,COUNTER) = PARMGT();
    VAR_INFO(1) =
    'ENTER THE RATE (FT**3/SEC) FOR WELL ' ||TEMPC||'.';
    VAR_INFO(2) =
            'POSITIVE FOR PUMPING, NEGATIVE FOR INJECTION.';
    VAR_INFO(3) = 'MAXIMUM LENGTH OF 8, REAL NUMBER.';
    VAR_INFO(4) = 'NOTE:  FT**3/SEC = GAL/MIN * 0.0022278';
    VAR_INFO(5) = 'VARIABLE "REC(' || TEMPC || ')" :';
    TYPE = REAL;
    LEN = 8;
    REC(COUNTER1,COUNTER) = PARMGT();
    TEMPN = REC(COUNTER1,COUNTER);
    IF TEMPN < 0 THEN DO;
      VAR_INFO(1) = 'ENTER THE CONCENTRATION OF THE INJECTED';
      VAR_INFO(2) = 'FLUID (MG/L) FOR WELL ' ||TEMPC|| '.';
      VAR_INFO(3) = 'MAXIMUM LENGTH OF 8, REAL NUMBER.';
      VAR_INFO(4) = 'VARIABLE "CNRECH(' || TEMPC || ')" :';
      TYPE = REAL;
      LEN = 8;
      CNRECH(COUNTER1,COUNTER) = PARMGT();
    END;
    ELSE CNRECH(COUNTER1,COUNTER) = '     0.0';
   END;
 END;
 DO WHILE((OLDNUM > -1) & (NUMBER1 > 0));
   COUNTER = 0;
   PUT FILE(SCREEN) EDIT('PUMPING/INJECTION WELLS')(X(7),A);
   PUT FILE(SCREEN) EDIT
   ('  WELL#      X      Y      REC      CNRECH')
   (SKIP,A);
   DO WHILE(COUNTER < NUMBER1);
     COUNTER = COUNTER + 1;
     IF OLDNUM < COUNTER THEN PUT FILE(SCREEN)
         EDIT('NEW')(SKIP,A);
     PUT FILE(SCREEN) EDIT(COUNTER,IX(COUNTER1,COUNTER),
     IY(COUNTER1,COUNTER),REC(COUNTER1,COUNTER),
     CNRECH(COUNTER1,COUNTER))(SKIP,X(4),F(2),X(1),2(X(4),A(2)),
                                  A(10),X(1),A(10));
   END;
   VAR_INFO(1) = 'ENTER WELL NUMBER (OR 0 TO CONTINUE):';
   LEN = 2;
   TYPE = INTEGER;
   TEMPCC = PARMGT();
   COUNTER = TEMPCC;
     IF COUNTER > 0 THEN DO;
     VAR_INFO(1) = 'PUMPING PERIOD ' || PMP ;
     VAR_INFO(2) =
     'IX(' || TEMPCC || ') = ' || IX(COUNTER1,COUNTER) ;
     VAR_INFO(3) = 'CHANGE (Y/N):';
     LEN = 1;
     TYPE = ANSWER;
     TEMPC = PARMGT();
     IF TEMPC = 'Y' THEN DO;
       VAR_INFO(1) = 'ENTER NEW VALUE:' ;
       LEN = 2;
       TYPE = INTEGER;
       IX(COUNTER1,COUNTER) = PARMGT();
     END;
     VAR_INFO(1) =
     'IY(' || TEMPCC || ') = ' || IY(COUNTER1,COUNTER) ;
     VAR_INFO(2) = 'CHANGE (Y/N):';
     LEN = 1;
     TYPE = ANSWER;
     TEMPC = PARMGT();
     IF TEMPC = 'Y' THEN DO;
       VAR_INFO(1) = 'ENTER NEW VALUE:' ;
       LEN = 2;
       TYPE = INTEGER;
       IY(COUNTER1,COUNTER) = PARMGT();
     END;
     VAR_INFO(1) =
     'REC(' || TEMPCC || ') = ' || REC(COUNTER1,COUNTER) ;
     VAR_INFO(2) = 'CHANGE (Y/N):';
     LEN = 1;
     TYPE = ANSWER;
     TEMPC = PARMGT();
     IF TEMPC = 'Y' THEN DO;
       VAR_INFO(1) = 'ENTER NEW VALUE:' ;
       TYPE = REAL;
       LEN = 8;
       REC(COUNTER1,COUNTER) = PARMGT();
     END;
     TEMPN = REC(COUNTER1,COUNTER);
     IF TEMPN < 0 THEN DO;
       VAR_INFO(1) =
          'CNRECH(' || TEMPCC || ') = ' || CNRECH(COUNTER1,COUNTER);
          VAR_INFO(2) = 'CHANGE (Y/N):';
          LEN = 1;
          TYPE = ANSWER;
          TEMPC = PARMGT();
          IF TEMPC = 'Y' THEN DO;
            VAR_INFO(1) = 'ENTER NEW VALUE:' ;
            TYPE = REAL;
            LEN = 8;
            CNRECH(COUNTER1,COUNTER) = PARMGT();
          END;
        END;
        ELSE CNRECH(COUNTER1,COUNTER) = '     0.0';
      END;
      ELSE OLDNUM = -1;
    END;
  END;
  COUNTER1 = COUNTER1 + 1;
END;
VAR_INFO(1) = 'TOL = ' || TOL ;
VAR_INFO(2) = 'USUALLY LESS THAN .01 .';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  TOL = PARMGT();
END;
VAR_INFO(1) = 'POROS = ' || POROS ;
VAR_INFO(2) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  POROS = PARMGT();
END;
VAR_INFO(1) = 'BETA = ' || BETA ;
VAR_INFO(2) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  LEN = 5;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  TYPE = REAL;
  BETA = PARMGT();
END;
VAR_INFO(1) = 'XDEL = ' || XDEL ;
VAR_INFO(2) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  XDEL = PARMGT();
END;
VAR_INFO(1) = 'YDEL = ' || YDEL ;
VAR_INFO(2) = 'CHANGE (Y/N):';
```

```
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  YDEL = PARMGT();
END;
VAR_INFO(1) = 'DLTRAT = ' || DLTRAT ;
VAR_INFO(2) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  DLTRAT = PARMGT();
END;
VAR_INFO(1) = 'CELDIS = ' || CELDIS ;
VAR_INFO(2) = 'VALUE BETWEEN 0 AND 1.0 .';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  UPPER_RANGE = 1.;
  CELDIS = PARMGT();
END;
VAR_INFO(1) = 'ANFCTR = ' || ANFCTR ;
VAR_INFO(2) = 'USE 1.0 FOR HOMOGENEOUS AQUIFER. ';
VAR_INFO(3) = 'CHANGE (Y/N):';
TYPE = ANSWER;
LEN = 1;
TEMPC = PARMGT();
IF TEMPC = 'Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:' ;
  LEN = 5;
  TYPE = REAL;
  ANFCTR = PARMGT();
END;
VAR_INFO(1) = 'NDECAY = ' || NDECAY ;
VAR_INFO(2) = 'CHANGE (Y/N):';
IF NDECAY = '      0' THEN DO;
  LEN=1;
  TYPE=ANSWER;
  TEMPC=PARMGT();
  IF TEMPC='Y' THEN DO;
    NDECAY = '      1';
    VAR_INFO(1) = 'ENTER DECAY HALFLIFE (YEARS).';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER.';
    VAR_INFO(3) = 'VARIABLE "DCYTIM" :';
    LEN = 10;
    TYPE = REAL;
    DCYTIM = PARMGT();
  END;
END;
ELSE DO;
  LEN=1;
  TYPE=ANSWER;
  TEMPC=PARMGT();
  IF TEMPC='Y' THEN DO;
```

```
    NDECAY = '     0';
    DCYTIM = '          0.';
  END;
  ELSE DO;
    VAR_INFO(1) = 'DCYTIM = ' || DCYTIM;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    LEN=1;
    TYPE=ANSWER;
    TEMPC=PARMGT();
    IF TEMPC='Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      LEN = 10;
      TYPE = REAL;
      DCYTIM = PARMGT();
    END;
  END;
END;
VAR_INFO(1) = 'NSORB = ' || NSORB ;
VAR_INFO(2) = 'CHANGE (Y/N):';
LEN=1;
TYPE=ANSWER;
TEMPC=PARMGT();
IF TEMPC='Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:';
  LEN = 5;
  TYPE = INTEGER;
  LOWER_RANGE = 0;
  UPPER_RANGE = 3;
  NSORB = PARMGT();
END;
IF (NSORB = '     0') THEN DO;
  NSORB = '     0';
  DENROC = '          0.';
  SORBQR = '          0.';
  SORBST = '          0.';
  SORBAL = '          0.';
END;
ELSE DO;
  VAR_INFO(1) = 'DENROC = ' || DENROC ;
  VAR_INFO(2) = 'CHANGE (Y/N):';
  LEN=1;
  TYPE=ANSWER;
  TEMPC=PARMGT();
  IF TEMPC='Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:';
    LEN =10;
    TYPE = REAL;
    DENROC = PARMGT();
  END;
  VAR_INFO(1) = 'SORBQR = ' || SORBQR ;
  VAR_INFO(2) = 'CHANGE (Y/N):';
  LEN=1;
  TYPE=ANSWER;
  TEMPC=PARMGT();
  IF TEMPC='Y' THEN DO;
    VAR_INFO(1) = 'ENTER NEW VALUE:';
    LEN =10;
    TYPE = REAL;
    SORBQR = PARMGT();
  END;
  IF (NSORB = '     2') THEN DO;
    VAR_INFO(1) = 'SORBST = ' || SORBST ;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    LEN=1;
    TYPE=ANSWER;
    TEMPC=PARMGT();
    IF TEMPC='Y' THEN DO;
      LEN =10;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      SORBST = PARMGT();
    END;
  END;
  IF (NSORB = '     3') THEN DO;
    VAR_INFO(1) = 'SORBAL = ' || SORBAL ;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    LEN=1;
    TYPE=ANSWER;
    TEMPC=PARMGT();
    IF TEMPC='Y' THEN DO;
      LEN =10;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      SORBAL = PARMGT();
    END;
  END;
END;
VAR_INFO(1) = 'ISOLV = ' || ISOLV ;
VAR_INFO(2) = 'CHANGE (Y/N):';
LEN=1;
TYPE=ANSWER;
TEMPC=PARMGT();
IF TEMPC='Y' THEN DO;
  LEN = 4;
  VAR_INFO(1) = 'ENTER NEW VALUE:';
  TYPE = INTEGER;
  ISOLV=PARMGT();
END;
VAR_INFO(1) = 'IHEAD = ' || IHEAD ;
VAR_INFO(2) = 'CHANGE (Y/N):';
LEN=1;
TYPE=ANSWER;
TEMPC=PARMGT();
IF TEMPC='Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:';
  LEN = 4;
  TYPE = INTEGER;
  IHEAD=PARMGT();
END;
VAR_INFO(1) = 'FCON = ' || FCON ;
VAR_INFO(2) = 'CHANGE (Y/N):';
LEN=1;
TYPE=ANSWER;
TEMPC=PARMGT();
IF TEMPC='Y' THEN DO;
  VAR_INFO(1) = 'ENTER NEW VALUE:';
  LEN = 4;
  TYPE = INTEGER;
  FCON=PARMGT();
END;
VAR_INFO(1) = 'TP = ' || TP ;
VAR_INFO(2) = 'CHANGE (Y/N):';
LEN=1;
TYPE=ANSWER;
TEMPC=PARMGT();
IF TEMPC='Y' THEN DO;
  LEN = 4;
  VAR_INFO(1) = 'ENTER NEW VALUE:';
  TYPE = INTEGER;
  TP=PARMGT();
END;
IF (FCON = '    1') THEN DO;
```

```
     VAR_INFO(1) = 'BTM = ' || BTM ;
     VAR_INFO(2) = 'CHANGE (Y/N):';
     LEN=1;
     TYPE=ANSWER;
     TEMPC=PARMGT();
     IF TEMPC='Y' THEN DO;
       LEN = 4;
       VAR_INFO(1) = 'ENTER NEW VALUE:';
       TYPE = INTEGER;
       BTM=PARMGT();
     END;
   END;
   ELSE BTM = '   0';
/*****************************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.             */
%INCLUDE 'B:PARMGT.PLI';
/*****************************************************/
NDVAR: END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                        (EDMTRX   )
 EDMTRX: PROC;
 /* THE EDMATRX SUBROUTINE IS USED TO PROMPT FOR THE
    NECESSARY INFORMATION TO MODIFY THE MATRICES.
 */
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
 %INCLUDE 'B:EXTVAR.PLI';
 /**********************************************/
   DCL REPLY                             CHAR(80) VAR,
        TEMP_NUM                         FIXED BIN,
        TEMP_NUM1                        FIXED BIN,
        I                                FIXED BIN,
        J                                FIXED BIN,
        CHARACTER                        CHAR(4) STATIC INIT('CHAR'),
        INTEGER                          CHAR(4) STATIC INIT('INT '),
        REAL                             CHAR(4) STATIC INIT('REAL'),
        NUMBER                           CHAR(4) STATIC INIT('NUM '),
        ANSWER                           CHAR(4) STATIC INIT('ANS '),
        TYPE                             CHAR(4) STATIC INIT(''),
        UPPER_RANGE                      FLOAT STATIC INIT(0),
        LOWER_RANGE                      FLOAT STATIC INIT(0),
        LEN                              FIXED BIN STATIC INIT(4),
        VAR_INFO(10)                     CHAR(80) VAR;
  DCL MTRXED                             ENTRY((NX_LMT,NY_LMT) CHAR(4) VAR,
                                         FIXED BIN, FIXED BIN, FIXED BIN);
  DO TEMP_NUM = 1 TO 10;
    VAR_INFO(TEMP_NUM) = '';
  END;
  TEMP_NUM = NY;
  TEMP_NUM1 = NX;
  VAR_INFO(1) = 'DO YOU WISH TO CHANGE ANY OF THE MATRIX INPUT (Y/N):';
  TYPE = ANSWER;
  LEN = 1;
  REPLY = PARMGT();
  IF REPLY = 'N' THEN GO TO NDMAT;
  IF (INPT_VPRM = '0') THEN DO;
    IF (TP = '   0') THEN
      VAR_INFO(1) = 'THE TRANSMISSIVITY FOR THE AREA IS CONSTANT.';
    ELSE
      VAR_INFO(1) = 'THE PERMEABILITY FOR THE AREA IS CONSTANT.';
    VAR_INFO(2) = 'CHANGE TO MATRIX (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'N' THEN DO;
      IF (TP = '   0')
      THEN VAR_INFO(1) = 'TRANSMISSIVITY = ' || FACT_VPRM;
      ELSE VAR_INFO(1) = 'PERMEABILITY = ' || FACT_VPRM;
      VAR_INFO(2) = 'CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN DO;
        VAR_INFO(1) = 'ENTER NEW VALUE:';
        TYPE = REAL;
        LEN = 10;
        FACT_VPRM = PARMGT();
      END;
  END;
  ELSE DO;
    INPT_VPRM = '1';
    IF (TP = '   0') THEN
      VAR_INFO(1) = 'ENTER THE TRANSMISSIVITY MULTIPLIER.';
    ELSE
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        VAR_INFO(1) = 'ENTER THE PERMEABILITY MULTIPLIER.';
      VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
      TYPE = REAL;
      [illegible] = 10;
      FACT_VPRM = PARMGT();
      IF (TP = '   O') THEN VAR_INFO(1) =
        'WHAT DO YOU WISH THE ENTIRE TRANSMISSIVITY MATRIX ';
      ELSE VAR_INFO(1) =
        'WHAT DO YOU WISH THE ENTIRE PERMEABILITY MATRIX ';
      VAR_INFO(2) = 'INITIALLY SET TO?';
      VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
      LEN = 4;
      REPLY = PARMGT();
      DO I = 1 TO NX;
        DO J = 1 TO NY;
          VPRM(J,I) = REPLY;
        END;
      END;
      CALL MTRXED(VPRM,TEMP_NUM1,TEMP_NUM,4);
    END;
  END;
  ELSE DO;
    IF (TP = '   O') THEN
      VAR_INFO(1) = 'THE TRANSMISSIVITY FOR THE AREA IS A MATRIX.';
    ELSE
      VAR_INFO(1) = 'THE PERMEABILITY FOR THE AREA IS A MATRIX.';
    VAR_INFO(2) = 'CHANGE TO CONSTANT (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      INPT_VPRM = 'O';
      IF (TP = '   O') THEN VAR_INFO(1) =
      'ENTER THE TRANSMISSIVITY FOR THE AREA (FT**2/SEC).';
      ELSE VAR_INFO(1) =
      'ENTER THE PERMEABILITY FOR THE AREA (FT/SEC).';
      VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
      TYPE = REAL;
      LEN = 10;
      FACT_VPRM = PARMGT();
    END;
    ELSE DO;
      IF (TP = '   O')
      THEN VAR_INFO(1) = 'TRANSMISSIVITY MULTIPLIER = ' || FACT_VPRM;
      ELSE VAR_INFO(1) = 'PERMEABILITY MULTIPLIER = ' || FACT_VPRM;
      VAR_INFO(2) = 'CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN DO;
        VAR_INFO(1) = 'ENTER NEW VALUE:';
        TYPE = REAL;
        LEN = 10;
        FACT_VPRM = PARMGT();
      END;
      VAR_INFO(1) = 'DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN CALL MTRXED(VPRM,TEMP_NUM1,TEMP_NUM,4);
    END;
  END;
IF (INPT_THCK = 'O') THEN DO;
  IF (BTM = '   O') THEN
    VAR_INFO(1)='THE SATURATED THICKNESS FOR THE AREA IS CONSTANT.';
  ELSE
    VAR_INFO(1)='THE BOTTOM ELEVATION FOR THE AREA IS CONSTANT.';
  VAR_INFO(2) = 'CHANGE TO MATRIX (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'N' THEN DO;
    IF (BTM = '    O') THEN
      VAR_INFO(1) = 'SATURATED THICKNESS = ' || FACT_THCK;
    ELSE
      VAR_INFO(1) = 'BOTTOM ELEVATION = ' || FACT_THCK;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_THCK = PARMGT();
    END;
  END;
  ELSE DO;
    INPT_THCK = '1';
    IF (BTM = '    O') THEN
      VAR_INFO(1) = 'ENTER THE SATURATED THICKNESS MULTIPLIER.';
    ELSE
      VAR_INFO(1) = 'ENTER THE BOTTOM ELEVATION MULTIPLIER.';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_THCK = PARMGT();
    IF (BTM = '    O') THEN
      VAR_INFO(1)='WHAT DO YOU WISH THE ENTIRE SATURATED THICKNESS ';
    ELSE
      VAR_INFO(1)='WHAT DO YOU WISH THE ENTIRE BOTTOM ELEVATION ';
    VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
    VAR_INFO(3) = '(MAXIMUM LENGTH OF 3):';
    TYPE = REAL;
    LEN = 3;
    REPLY = PARMGT();
    DO I = 1 TO NX;
      DO J = 1 TO NY;
        THCK(J,I) = REPLY,
      END;
    END;
    CALL MTRXED(THCK,TEMP_NUM1,TEMP_NUM,3);
  END;
END;
ELSE DO;
  IF (BTM = '    O') THEN
    VAR_INFO(1)='THE SATURATED THICKNESS FOR THE AREA IS A MATRIX.';
  ELSE
    VAR_INFO(1)='THE BOTTOM ELEVATION FOR THE AREA IS A MATRIX.';
  VAR_INFO(2) = 'CHANGE TO CONSTANT (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'Y' THEN DO;
    INPT_THCK = 'O';
    IF (BTM = '    O') THEN
      VAR_INFO(1) =
      'ENTER THE SATURATED THICKNESS FOR THE AREA (FEET).';
    ELSE
      VAR_INFO(1) =
      'ENTER THE BOTTOM ELEVATION FOR THE AREA (FEET).';
    VAR_INFO(2) = ' MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_THCK = PARMGT();
  END;
  ELSE DO;
    IF (BTM = '    O') THEN
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      VAR_INFO(1) = 'SATURATED THICKNESS MULTIPLIER = ' || FACT_THCK;
    ELSE
      VAR_INFO(1) = 'BOTTOM ELEVATION MULTIPLIER = ' || FACT_THCK;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_THCK = PARMGT();
    END;
    VAR_INFO(1) = 'DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN CALL MTRXED(THCK,TEMP_NUM1,TEMP_NUM,3);
  END;
END;
IF (INPT_WT = '0') THEN DO;
  VAR_INFO(1) = 'THE POTENTIOMETRIC HEAD FOR THE AREA IS CONSTANT.';
  VAR_INFO(2) = 'CHANGE TO MATRIX (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'N' THEN DO;
    VAR_INFO(1) = 'POTENTIOMETRIC HEAD = ' || FACT_WT;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_WT = PARMGT();
    END;
  END;
  ELSE DO;
    INPT_WT = '1';
    VAR_INFO(1) = 'ENTER THE POTENTIOMETRIC HEAD MULTIPLIER.';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_WT = PARMGT();
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE POTENTIOMETRIC HEAD';
    VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
    VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
    TYPE = REAL;
    LEN = 4;
    REPLY = PARMGT();
    DO I = 1 TO NX;
      DO J = 1 TO NY;
        WT(J,I) = REPLY;
      END;
    END;
    CALL MTRXED(WT,TEMP_NUM1,TEMP_NUM,4);
  END;
END;
ELSE DO;
  VAR_INFO(1) = 'THE POTENTIOMETRIC HEAD FOR THE AREA IS A MATRIX.';
  VAR_INFO(2) = 'CHANGE TO CONSTANT (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'Y' THEN DO;
    INPT_WT = '0';
    VAR_INFO(1) =
      'ENTER THE POTENTIOMETRIC HEAD FOR THE AREA.';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_WT = PARMGT();
  END;
  ELSE DO;
    VAR_INFO(1) = 'POTENTIOMETRIC HEAD MULTIPLIER = ' || FACT_WT;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_WT = PARMGT();
    END;
    VAR_INFO(1) = 'DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN CALL MTRXED(WT,TEMP_NUM1,TEMP_NUM,4);
  END;
END;
IF (INPT_RECH = '0') THEN DO;
  VAR_INFO(1) = 'THE RECHARGE FOR THE AREA IS CONSTANT.';
  VAR_INFO(2) = 'CHANGE TO MATRIX (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'N' THEN DO;
    VAR_INFO(1) = 'RECHARGE = ' || FACT_RECH;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_RECH = PARMGT();
    END;
  END;
  ELSE DO;
    INPT_RECH = '1';
    VAR_INFO(1) = 'ENTER THE RECHARGE MULTIPLIER.';
    VAR_INFO(2) = 'RECHARGE SHOULD BE NEGATIVE AND INCLUDE E-T.';
    VAR_INFO(3) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_RECH = PARMGT();
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE RECHARGE ';
    VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
    VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
    TYPE = REAL;
    LEN = 4;
    REPLY = PARMGT();
    DO I = 1 TO NX;
      DO J = 1 TO NY;
        RECH(J,I) = REPLY;
      END;
    END;
    CALL MTRXED(RECH,TEMP_NUM1,TEMP_NUM,4);
  END;
END;
ELSE DO;
  VAR_INFO(1) = 'THE RECHARGE FOR THE AREA IS A MATRIX.';
  VAR_INFO(2) = 'CHANGE TO CONSTANT (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'Y' THEN DO;
```

```
    INPT_RECH = '0';
    VAR_INFO(1) =
      'ENTER THE RECHARGE FOR THE AREA (FT/SEC).';
    VAR_INFO(2) = 'NEGATIVE NUMBER; INCLUDES E-T.';
    VAR_INFO(3) = ' MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_RECH = PARMGT();
  END;
  ELSE DO;
    VAR_INFO(1) = 'RECHARGE MULTIPLIER = ' || FACT_RECH;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_RECH = PARMGT();
    END;
    VAR_INFO(1) = 'DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN CALL MTRXED(RECH,TEMP_NUM1,TEMP_NUM,4);
  END;
END;
IF (INPT_NODEID = '0') THEN DO;
  VAR_INFO(1) = 'THE NODEID FOR THE AREA IS CONSTANT.';
  VAR_INFO(2) = 'CHANGE TO MATRIX (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'N' THEN DO;
    VAR_INFO(1) = 'NODEID = ' || FACT_NODEID;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_NODEID = PARMGT();
    END;
  END;
  ELSE DO;
    INPT_NODEID = '1';
    VAR_INFO(1) = 'ENTER THE NODEID MULTIPLIER.';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_NODEID = PARMGT();
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE NODEID ';
    VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
    VAR_INFO(3) = '(MAXIMUM LENGTH OF 1):';
    TYPE = INTEGER;
    LEN = 1;
    REPLY = PARMGT();
    DO I = 1 TO NX;
      DO J = 1 TO NY;
        NODEID(J,I) = REPLY;
      END;
    END;
    CALL MTRXED(NODEID,TEMP_NUM1,TEMP_NUM,1);
  END;
END;
ELSE DO;
  VAR_INFO(1) = 'THE NODEID FOR THE AREA IS A MATRIX.';
```

```
    VAR_INFO(2) = 'CHANGE TO CONSTANT (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      INPT_NODEID = '0';
      VAR_INFO(1) =
        'ENTER THE NODEID FOR THE AREA.';
      VAR_INFO(2) = 'BETWEEN 0 & 9, MAXIMUM LENGTH OF 1:';
      TYPE = INTEGER;
      LEN = 1;
      FACT_NODEID = PARMGT();
    END;
    ELSE DO;
      VAR_INFO(1) = 'NODEID MULTIPLIER = ' || FACT_NODEID;
      VAR_INFO(2) = 'CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN DO;
        VAR_INFO(1) = 'ENTER NEW VALUE:';
        TYPE = REAL;
        LEN = 10;
        FACT_NODEID = PARMGT();
      END;
      VAR_INFO(1) = 'DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN CALL MTRXED(NODEID,TEMP_NUM1,TEMP_NUM,1);
    END;
END;
IF (INPT_CONC = '0') THEN DO;
  VAR_INFO(1) = 'THE CONCENTRATION FOR THE AREA IS CONSTANT.';
  VAR_INFO(2) = 'CHANGE TO MATRIX (Y/N):';
  TYPE = ANSWER;
  REPLY = PARMGT();
  IF REPLY = 'N' THEN DO;
    VAR_INFO(1) = 'CONCENTRATION = ' || FACT_CONC;
    VAR_INFO(2) = 'CHANGE (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      VAR_INFO(1) = 'ENTER NEW VALUE:';
      TYPE = REAL;
      LEN = 10;
      FACT_CONC = PARMGT();
    END;
  END;
  ELSE DO;
    INPT_CONC = '1';
    VAR_INFO(1) = 'ENTER THE CONCENTRATION MULTIPLIER.';
    VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
    TYPE = REAL;
    LEN = 10;
    FACT_CONC = PARMGT();
    VAR_INFO(1) = 'WHAT DO YOU WISH THE ENTIRE CONCENTRATION';
    VAR_INFO(2) = 'MATRIX INITIALLY SET TO?';
    VAR_INFO(3) = '(MAXIMUM LENGTH OF 4):';
    TYPE = REAL;
    LEN = 4;
    REPLY = PARMGT();
    DO I = 1 TO NX;
      DO J = 1 TO NY;
        CONC(J,I) = REPLY;
      END;
    END;
    CALL MTRXED(CONC,TEMP_NUM1,TEMP_NUM,4);
  END;
  END;
  ELSE DO;
    VAR_INFO(1) = 'THE CONCENTRATION FOR THE AREA IS A MATRIX.';
    VAR_INFO(2) = 'CHANGE TO CONSTANT (Y/N):';
    TYPE = ANSWER;
    REPLY = PARMGT();
    IF REPLY = 'Y' THEN DO;
      INPT_CONC = 'O';
      VAR_INFO(1) =
        'ENTER THE CONCENTRATION FOR THE AREA.';
      VAR_INFO(2) = 'MAXIMUM LENGTH OF 10, REAL NUMBER:';
      TYPE = REAL;
      LEN = 10;
      FACT_CONC = PARMGT();
    END;
    ELSE DO;
      VAR_INFO(1) = 'CONCENTRATION MULTIPLIER = ' || FACT_CONC;
      VAR_INFO(2) = 'CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN DO;
        VAR_INFO(1) = 'ENTER NEW VALUE:';
        TYPE = REAL;
        LEN = 10;
        FACT_CONC = PARMGT();
      END;
      VAR_INFO(1) = 'DISPLAY THE MATRIX FOR POSSIBLE CHANGE (Y/N):';
      TYPE = ANSWER;
      REPLY = PARMGT();
      IF REPLY = 'Y' THEN CALL MTRXED(CONC,TEMP_NUM1,TEMP_NUM,4);
    END;
  END;
/************************************************/
/* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
%INCLUDE 'B:PARMGT.PLI';
/************************************************/
NDMAT: END;
```

APPENDIX I-C

UTILITY ROUTINES

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                       (DATATP  )
 DATATP: PROC(STRING,TYPE);
  /* THE DATATYP SUBROUTINE USES A FSA TO DETERMINE THE
     TYPE OF DATA PASSED TO THE SUBROUTINE (USE WITH ASCII DATA).
     RENAME TO "ASCII" IF USING EBCDIC.
  */
   DCL STRING                         CHAR(80) VAR,
       TYPE                           CHAR(4),
       TEMPSTR                        CHAR(128) VAR,
       TRANSSTR                       CHAR(128) VAR,
       LEVEL                          FIXED BIN,
       COL                            FIXED BIN,
       I                              FIXED BIN,
       J                              FIXED BIN,
       F_S_A(13,9)                    FIXED BIN STATIC INIT(
            /* 1   2   3   4   5   6   7   8   9 */
            /*A-Z,0-9, . ,+/-, Y , E , S , N , O */
   /* 1  */    99, 2 , 3 , 8 , 9 , 99, 99, 12, 99, /*99 = CHARACTER*/
   /* 2  */    99, 2 , 3 , 99, 99, 99, 99, 99, 99, /* 2 = INTEGER  */
   /* 3  */    99, 3 , 99, 99, 99, 4 , 99, 99, 99, /* 3 = REAL     */
   /* 4  */    99, 5 , 99, 7 , 99, 99, 99, 99, 99, /* 4 = CHARACTER*/
   /* 5  */    99, 6 , 99, 99, 99, 99, 99, 99, 99, /* 5 = REAL EXP */
   /* 6  */    99, 99, 99, 99, 99, 99, 99, 99, 99, /* 6 = REAL EXP */
   /* 7  */    99, 5 , 99, 99, 99, 99, 99, 99, 99, /* 7 = CHARACTER*/
   /* 8  */    99, 2 , 3 , 99, 99, 99, 99, 99, 99, /* 8 = CHARACTER*/
   /* 9  */    99, 99, 99, 99, 99, 10, 99, 99, 99, /* 9 = YES      */
   /* 10 */    99, 99, 99, 99, 99, 99, 11, 99, 99, /*10 = CHARACTER*/
   /* 11 */    99, 99, 99, 99, 99, 99, 99, 99, 99, /*11 = YES      */
   /* 12 */    99, 99, 99, 99, 99, 93, 99, 99, 13, /*12 = NO       */
   /* 13 */    99, 99, 99, 99, 99, 99, 99, 99, 99);/*13 = NO       */
  TRANSSTR = '1111111111'||'1111111111'||'1111111111'||'11111111111';
  TRANSSTR = TRANSSTR ||'1141431'||'2222222222'||'11111111111';
  TRANSSTR = TRANSSTR ||'6'||'11111111'||'89111'||'7111115';
  TRANSSTR = TRANSSTR ||'1111111111'||'1111111111'||'1111111111';
  TRANSSTR = TRANSSTR ||'11111111';
  TEMPSTR  = TRANSLATE(STRING,TRANSSTR);
  LEVEL=1;
  J = LENGTH(TEMPSTR);
  DO I=1 TO J;
    COL = SUBSTR(TEMPSTR,I,1);
    LEVEL = F_S_A(LEVEL,COL);
    IF LEVEL = 99 THEN GO TO LV;
  END;
LV:
  IF LEVEL=99 | LEVEL=1 | LEVEL=4 | LEVEL=7 | LEVEL=8 | LEVEL=10
    THEN TYPE = 'CHAR';
  ELSE IF LEVEL=3 | LEVEL=5 | LEVEL=6 THEN TYPE = 'REAL';
  ELSE IF LEVEL=2 THEN TYPE = 'INT ';
  ELSE IF LEVEL=9 | LEVEL=11 | LEVEL=12 | LEVEL=13 THEN TYPE = 'ANS ';
  ELSE SIGNAL ERROR;
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                        (EBCDIC  )

 EBCDIC:PROC(STRING,TYPE);
 /* THIS SUBROUTINE USES A FSA TO DETERMINE THE
    TYPE OF DATA PASSED TO THE SUBROUTINE (USE WITH EBCDIC DATA).
    RENAME TO "DATATP" BEFOR USING.
 */
   DCL STRING                              CHAR(*) VAR,
       TYPE                                CHAR(*),
       TEMPSTR                             CHAR(256) VAR,
       TRANSSTR                            CHAR(256) VAR,
       LEVEL                               FIXED BIN INIT(1),
       COL                                 FIXED BIN INIT(0),
       I                                   FIXED BIN INIT(0),
       J                                   FIXED BIN INIT(0),
       F_S_A(13,9)                         FIXED BIN STATIC INIT(
             /* 1    2    3    4    5    6    7    8    9 */
             /*A-Z,0-9,  .  ,+/-,  Y ,  E ,  S ,  N ,  O */
    /* 1  */    99, 2 , 3 , 8 , 9 , 99, 99, 12, 99, /*99 = CHARACTER*/
    /* 2  */    99, 2 , 3 , 99, 99, 99, 99, 99, 99, /* 2 = INTEGER  */
    /* 3  */    99, 3 , 99, 99, 99, 4 , 99, 99, 99, /* 3 = REAL     */
    /* 4  */    99, 5 , 99, 7 , 99, 99, 99, 99, 99, /* 4 = CHARACTER*/
    /* 5  */    99, 6 , 99, 99, 99, 99, 99, 99, 99, /* 5 = REAL EXP */
    /* 6  */    99, 99, 99, 99, 99, 99, 99, 99, 99, /* 6 = REAL EXP */
    /* 7  */    99, 5 , 99, 99, 99, 99, 99, 99, 99, /* 7 = CHARACTER*/
    /* 8  */    99, 2 , 3 , 99, 99, 99, 99, 99, 99, /* 8 = CHARACTER*/
    /* 9  */    99, 99, 99, 99, 99, 10, 99, 99, 99, /* 9 = YES      */
    /* 10 */    99, 99, 99, 99, 99, 99, 11, 99, 99, /*10 = CHARACTER*/
    /* 11 */    99, 99, 99, 99, 99, 99, 99, 99, 99, /*11 = YES      */
    /* 12 */    99, 99, 99, 99, 99, 99, 99, 99, 13, /*12 = NO       */
    /* 13 */    99, 99, 99, 99, 99, 99, 99, 99, 99);/*13 = NO       */
   TRANSSTR = (75)'1' || '3114' || (17)'1' || '4';
   TRANSSTR = TRANSSTR || (100)'1' || '6' ;
   TRANSSTR = TRANSSTR || (15)'1' || '89' ;
   TRANSSTR = TRANSSTR || (11)'1' || '7' || (5)'1' || '5' ;
   TRANSSTR = TRANSSTR || (7)'1' || (10)'2' || (6)'1' ;

   TEMPSTR  = TRANSLATE(STRING,TRANSSTR);
   J = LENGTH(TEMPSTR);
   DO I=1 TO J;
     COL = SUBSTR(TEMPSTR,I,1);
     LEVEL = F_S_A(LEVEL,COL);
     IF LEVEL = 99 THEN GO TO LV;
   END;
 LV:
   IF LEVEL=99 | LEVEL=1 | LEVEL=4 | LEVEL=7 | LEVEL=8 | LEVEL=10
     THEN TYPE = 'CHAR';
   ELSE IF LEVEL=3 | LEVEL=5 | LEVEL=6 THEN TYPE = 'REAL';
   ELSE IF LEVEL=2 THEN TYPE = 'INT';
   ELSE IF LEVEL=9 | LEVEL=11 | LEVEL=12 | LEVEL=13 THEN TYPE = 'ANS';
   ELSE SIGNAL ERROR;
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                        (DBLANK  )
  DBLANK: PROC(LINE) RETURNS(CHAR(80) VAR);
/*                                                                       */
/*   THIS PROCEDURE REMOVES BLANKS FROM THE FRONT AND BACK OF A          */
/*   STRING AND CHANGES ANY LOWER CASE LETTERS TO UPPER CASE LETTERS.    */
/*                                                                       */
   DCL LINE                            CHAR(80) VAR,
       OUT_LINE                        CHAR(80) VAR,
       LOWER_CASE                      CHAR(26) STATIC INIT
                                       ('abcdefghijklmnopqrstuvwxyz'),
       UPPER_CASE                      CHAR(26) STATIC INIT
                                       ('ABCDEFGHIJKLMNOPQRSTUVWXYZ'),
       SUBSTR                          BUILTIN;
   OUT_LINE = LINE;
   IF OUT_LINE ¬= '' THEN DO WHILE (SUBSTR(OUT_LINE,1,1) = ' ');
     OUT_LINE = SUBSTR(OUT_LINE,2);
   END;
   IF OUT_LINE ¬= '' THEN
     DO WHILE(SUBSTR(OUT_LINE,LENGTH(OUT_LINE)) = ' ');
     OUT_LINE = SUBSTR(OUT_LINE,1,(LENGTH(OUT_LINE)-1));
   END;
   OUT_LINE = TRANSLATE(OUT_LINE,UPPER_CASE,LOWER_CASE);
   RETURN(OUT_LINE);
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL                                      (INPUT    )

 INPUT: PROC(INFO_TYPE,IN_LINE);
 /* THE INPUT SUBROUTINE CALLS INPUTR WHICH IS USED TO READ IN
    ALL INFORMATION FROM THE SCREEN AND DETERMINE THE DATA TYPE.
 */
   DCL INFO_TYPE                      CHAR(4),
       IN_LINE                        CHAR(80) VAR,
       UP_LIMIT                       FLOAT,
       LOW_LIMIT                      FLOAT;
   DCL INPUTR    ENTRY(CHAR(4), CHAR(80) VAR, FLOAT, FLOAT);
   UP_LIMIT = 1.0E+30;
   LOW_LIMIT = -1.0E+30;
   CALL INPUTR(INFO_TYPE,IN_LINE,LOW_LIMIT,UP_LIMIT);
 END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                    (INPUTR   )
 INPUTR: PROC(INFO_TYPE,IN_LINE,LOW_LIMIT,UP_LIMIT);
 /* THE INPUT SUBROUTINE IS USED TO READ IN ALL INFORMATION
    FROM THE SCREEN AND DETERMINE THE DATA TYPE. (CALLS DATATP)
 */
 /************************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
 %INCLUDE 'B:EXTVAR.PLI';
 /************************************************/
   DCL INFO_TYPE                     CHAR(4),
       IN_LINE                       CHAR(80) VAR,
       UP_LIMIT                      FLOAT,
       LOW_LIMIT                     FLOAT,
       TEMP_NUM                      FLOAT,
       TEMP_TYPE                     CHAR(4),
       COMPLETE                      BIT(1), /* TRUE */
       DBLANK    ENTRY(CHAR(80) VAR) RETURNS(CHAR(80) VAR),
       DATATP    ENTRY(CHAR(80) VAR, CHAR(4));
   COMPLETE = '1'B;
   DO WHILE(COMPLETE);
     GET FILE(CRT) EDIT(IN_LINE) (A);
     IN_LINE = DBLANK(IN_LINE);
     IF IN_LINE = 'EXIT' THEN STOP;
     CALL DATATP(IN_LINE,TEMP_TYPE);
     IF INFO_TYPE='CHAR' THEN COMPLETE = '0'B;
     ELSE IF INFO_TYPE='NUM ' THEN DO;
       IF TEMP_TYPE = 'INT ' | TEMP_TYPE = 'REAL' THEN DO;
         TEMP_NUM = IN_LINE;
         IF LOW_LIMIT > TEMP_NUM | TEMP_NUM > UP_LIMIT THEN
           PUT FILE(SCREEN) EDIT(
             'INCORRECT RESPONSE, YOUR ANSWER MUST BE FROM',LOW_LIMIT,
             'TO ',UP_LIMIT,
             'REENTER :') (A,F(10,4),SKIP,A,F(10,4),SKIP,A);
         ELSE COMPLETE = '0'B;
       END;
       ELSE
         PUT FILE(SCREEN) EDIT(
           'INCORRECT RESPONSE, YOUR ANSWER MUST BE NUMERICAL.',
           'REENTER :') (2(SKIP,A));
     END;
     ELSE IF INFO_TYPE='REAL' THEN DO;
       IF TEMP_TYPE = 'INT ' | TEMP_TYPE = 'REAL' THEN DO;
         TEMP_NUM = IN_LINE;
         IF TEMP_TYPE = 'INT ' THEN PUT FILE(SCREEN) SKIP;
         IF LOW_LIMIT > TEMP_NUM | TEMP_NUM > UP_LIMIT THEN
           PUT FILE(SCREEN) EDIT(
             'INCORRECT RESPONSE, YOUR ANSWER MUST BE FROM',LOW_LIMIT,
             'TO ',UP_LIMIT,
             'REENTER :') (A,F(10,4),SKIP,A,F(10,4),SKIP,A);
         ELSE COMPLETE = '0'B;
       END;
       ELSE
         PUT FILE(SCREEN) EDIT
           ('INCORRECT RESPONSE, YOUR ANSWER MUST BE A REAL NUMBER.',
            'REENTER :') (2(SKIP,A));
     END;
     ELSE IF INFO_TYPE='INT' THEN DO;
       IF TEMP_TYPE ¬= 'INT ' THEN
         PUT FILE(SCREEN) EDIT(
           'INCORRECT RESPONSE, YOUR ANSWER MUST BE AN INTEGER ',
           '(NO DECIMAL) REENTER :') (2(SKIP,A));
       ELSE DO;
         TEMP_NUM = IN_LINE;
```

```
        IF LOW_LIMIT > TEMP_NUM | TEMP_NUM > UP_LIMIT THEN
          PUT FILE(SCREEN) EDIT(
            'INCORRECT RESPONSE, YOUR ANSWER MUST BE FROM',LOW_LIMIT,
            'TO ',UP_LIMIT,
            'REENTER :') (A,F(6),SKIP,A,F(6),SKIP,A);
        ELSE COMPLETE = '0'B;
      END;
    END;
    ELSE IF INFO_TYPE='ANS ' THEN DO;
      IF TEMP_TYPE ¬= 'ANS ' THEN
        PUT FILE(SCREEN) EDIT(
          'INCORRECT RESPONSE, YOUR ANSWER MUST BE "YES" OR "NO"',
          'REENTER :') (2(SKIP,A));
      ELSE DO;
        COMPLETE = '0'B;
        IN_LINE = SUBSTR(IN_LINE,1,1);
      END;
    END;
    ELSE SIGNAL ERROR;
  END;
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                          (MTRXED   )
 MTRXED: PROC(MATRIX,COL_SIZE,ROW_SIZE,FMT_SIZE);
 /*                                                                   */
 /*  MATRXED IS A LINE ORIENTED MATRIX EDITOR.                        */
 /*                                                                   */
 /*  PARAMETERS IN:                                                   */
 /*    MATRIX -------- IS A TWO DIMENSIONAL CHARACTER ARRAY.          */
 /*    COL_SIZE ------ IS THE NUMBER OF COLUMNS IN "MATRIX".          */
 /*    ROW_SIZE ------ IS THE NUMBER OF ROWS IN "MATRIX".             */
 /*    FMT_SIZE ------ IS THE LENGTH OF MATRIX, USED FOR RIGHT        */
 /*                    JUSTIFICATION.                                 */
 /*                                                                   */
 /*  GLOBAL VARIABLES:                                                */
 /*    SCREEN -------- OUTPUT FILE TO THE SCREEN.                     */
 /*    CRT ----------- INPUT FILE FROM THE SCREEN.                    */
 /*                                                                   */
 /*  INTERNAL VARIABLES:                                              */
 /*    START_COL ----- CURRENT POINTER ON START OF SHOWN MATRIX.      */
 /*    END_COL   ----- CURRENT POINTER ON END OF SHOWN MATRIX.        */
 /*    START_ROW ----- CURRENT POINTER ON START OF SHOWN MATRIX.      */
 /*    END_ROW   ----- CURRENT POINTER ON END OF SHOWN MATRIX.        */
 /*    CHAR_TYP  ----- PARAMETER THAT RETURNS THE TYPE OF VARABLE     */
 /*                    PASSED TO "DATATYP" (EX: CHAR,INT,REAL)        */
 /*    CURRENT_ROW --  CURRENT POINTER ON THE ROW CURRENTLY BEING     */
 /*                    WORKED ON.                                     */
 /*    NUMBER    ----- TEMPORARY VARIABLE.                            */
 /*    ANSWER    ----- TEMPORARY VARIABLE.                            */
 /*    I         ----- COUNTER                                        */
 /*    J         ----- COUNTER                                        */
 /*                                                                   */
 /**************************************************/                 */
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.          */
 %INCLUDE 'B:EXTVAR.PLI';
 /**************************************************/
  DCL MATRIX(NX_LMT,NY_LMT)                   CHAR(4) VAR,
      COL_SIZE                          FIXED BIN,
      ROW_SIZE                          FIXED BIN,
      FMT_SIZE                          FIXED BIN,
      START_COL                         FIXED BIN,
      START_ROW                         FIXED BIN,
      END_COL                           FIXED BIN,
      END_ROW                           FIXED BIN,
      CURRENT_ROW                       FIXED BIN,
      I                                 FIXED BIN,
      J                                 FIXED BIN,
      NUMBER_OF_FIELDS                  FIXED BIN,
      CHAR_TYP                          CHAR(4),
      NUMBER                            CHAR(80) VAR,
      ANSWER                            CHAR(80) VAR,
      BAD_INFO                          CHAR(80) VAR,
      TEMP                              CHAR(80) VAR,
      BLANKS        CHAR(20) STATIC INIT('                    '),
      C_FLAG                            BIT(1);
  DCL DBLANK    ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR),
      DATATP    ENTRY (CHAR(80) VAR,CHAR(4)),
      INPUT     ENTRY (CHAR(4),CHAR(80) VAR);
  START_COL=1;
  START_ROW=1;
  END_COL=0;
  END_ROW=0;
  CURRENT_ROW=1;
  I=1;
  J=1;
```

```
   NUMBER_OF_FIELDS=0;
   C_FLAG='0'B;
 /*                                                                    */
 /*  CHECK FOR ERRORS ON THE THE PARAMETERS PASSED IN AND PRINT        */
 /*  ERROR MESSAGES AND RETURN.                                        */
 /*                                                                    */
   IF COL_SIZE < 3    |   /* OR */
      ROW_SIZE < 3    |   /* OR */
      FMT_SIZE < 1    THEN DO;
      PUT FILE(SCREEN) EDIT
        ('****** ERROR  MATRIX TO BE EDITED HAS :',
         '               NO COLUMNS, AND OR,',
         '               NO ROWS, AND OR,',
         '               NO LENGTH.',
         '"MATRXED" ENDING ON ERROR.') (SKIP(2),5(A,SKIP));
      RETURN;
   END ;
 /*                                                                    */
 /*  THE FOLLOWING SETS UP FOR 80 COLUMN TERMINALS.                    */
 /*                                                                    */
   NUMBER_OF_FIELDS = 72./FLOAT(FMT_SIZE + 1);
 /*                                                                    */
 /*  THE FOLLOWING CHECKS TO SEE IF THE DATA PASSED TO THE MATRIX      */
 /*  EDITOR IS OF THE CORRECT FORMAT IF NOT IT CORRECTS IT.            */
 /*                                                                    */
   DO I=1 TO COL_SIZE;
     DO J=1 TO ROW_SIZE;
       NUMBER = MATRIX(J,I);
       NUMBER = DBLANK(NUMBER);
       IF LENGTH(NUMBER) < FMT_SIZE THEN
          NUMBER = SUBSTR(BLANKS,1,
                   (FMT_SIZE-LENGTH(NUMBER))) || NUMBER ;
       IF LENGTH(NUMBER) > FMT_SIZE THEN
         NUMBER = SUBSTR(NUMBER,1,FMT_SIZE);
       MATRIX(J,I) = NUMBER;
     END;
   END;
 /*                                                                    */
 /*  SET INITIAL CONDITIONS FOR END OF COLUMN AND END OF ROW.          */
 /*                                                                    */
   IF COL_SIZE > NUMBER_OF_FIELDS THEN END_COL = NUMBER_OF_FIELDS;
   ELSE END_COL = COL_SIZE;
   IF ROW_SIZE > 12 THEN END_ROW = 12;
   ELSE END_ROW = ROW_SIZE;
 /*                                                                    */
 /*  WRITE THE INITIAL MATRIX TO THE SCREEN.                           */
 /*                                                                    */
   CALL WRTSCRN;
 /*                                                                    */
 /*  ENTER LOOP TO READ FROM SCREEN AND INTERPRET COMMANDS.            */
 /*                                                                    */
   DO WHILE('1'B);
 /*                                                                    */
 /*  READ THE UPDATED LINE OR COMMAND FROM THE SCREEN, REMOVE BLANKS   */
 /*  AND UPCASE LOWER CASE LETTERS.                                    */
 /*  REMOVE CARRIAGE RETURN, LINE FEED IF MICRO VERSION.               */
 /*                                                                    */
     GET FILE(CRT) EDIT(ANSWER)(A);
     ANSWER = DBLANK(ANSWER);
 /*                                                                    */
 /*  DETERMINE IF THE LINE THAT WAS ENTERED IS AN UPDATED ROW OR       */
 /*  A COMMAND.                                                        */
 /*                                                                    */
     IF SUBSTR(ANSWER,1,1) = '*' THEN DO;
 /*                                                                    */
 /*  "PEAL" OFF FIRST SET OF CHARACTERS AND DETERMINE IF THEY ARE      */
```

```
/*  A NUMBER OR NOT.                                                    */
/*                                                                      */
      ANSWER = SUBSTR(ANSWER,2);
      TEMP = PEAL(ANSWER);
      CALL DATATP(TEMP,CHAR_TYP);
      IF CHAR_TYP = 'INT ' THEN DO;
/*                                                                      */
/*  SET CURRENT_ROW (I.E ROW) EQUAL TO TEMP, AND ENTER LOOP             */
/*  TO RESET CURRENT MATRIX ROW TO NEW VALUES.                          */
/*                                                                      */
        CURRENT_ROW = TEMP;
        DO I = START_COL TO END_COL;
          NUMBER = PEAL(ANSWER);
/*                                                                      */
/*  CHECK TO SEE IF "NUMBER" IS A NUMBER, PAD WITH BLANKS ON LEFT       */
/*  SIDE (IF NECESSARY) AND ENTER IT INTO THE "MATRIX".                 */
/*  IF "NUMBER" IS A CHARACTER THEN LEAVE CURRENT VALUE OF              */
/*  MATRIX(CURRENT_ROW,I) ALONE AND CONTINUE WITH LINE.                 */
/*                                                                      */
          CALL DATATP(NUMBER,CHAR_TYP);
          IF CHAR_TYP = 'INT ' |  /* OR */
             CHAR_TYP = 'REAL'   THEN DO;
             IF LENGTH(NUMBER) < FMT_SIZE THEN
                NUMBER = SUBSTR(BLANKS,1,
                     (FMT_SIZE-LENGTH(NUMBER))) || NUMBER ;
             IF LENGTH(NUMBER) > FMT_SIZE THEN
                NUMBER = SUBSTR(NUMBER,1,FMT_SIZE);
             MATRIX(CURRENT_ROW,I) = NUMBER;
          END;
        END;
      END;
      ELSE DO;
        C_FLAG = '1'B;
        BAD_INFO = 'INVALID ROW, OR COMMAND STARTING WITH "*".';
      END;
    END;
/*                                                                      */
/*  IF IT IS NOT AN UPDATE ROW THEN CHECK TO SEE IF IT IS NULL          */
/*  IF NOT THEN ASSUME IT IS A COMMAND.                                 */
/*                                                                      */
    ELSE DO;
      IF SUBSTR(ANSWER,1,1) = '@' THEN
         ANSWER = DBLANK(SUBSTR(ANSWER,12));
      IF ANSWER = '' THEN GO TO LV;
/*                                                                      */
/*  "PEAL" OFF THE NEXT CHARACTER STRING AND DETERMINE IF IT IS         */
/*  A COMMAND.                                                          */
/*                                                                      */
      C_FLAG = '1'B;
      NUMBER=PEAL(ANSWER);
      IF NUMBER='E'|NUMBER='EN'|NUMBER='END' THEN RETURN;
/*                                                                      */
/*  IF THE COMMAND IS SHIFT THEN "PEAL" OFF THE NEXT CHARACTER          */
/*  STRING AND CHECK TO SEE IF IT IS A NUMBER, IF NOT THEN              */
/*  PROMPT FOR THE COLUMN NUMBER. THEN SET THE START COLUMN.            */
/*                                                                      */
      ELSE IF NUMBER='S'|NUMBER='SH'|NUMBER='SHI'|NUMBER='SHIF'|
              NUMBER='SHIFT' THEN DO;
        NUMBER = PEAL(ANSWER);
        CALL DATATP(NUMBER,CHAR_TYP);
        IF CHAR_TYP = 'CHAR' THEN DO;
          PUT FILE(SCREEN) EDIT
            ('ENTER THE COLUMN NUMBER :') (SKIP,A);
          CALL INPUT('INT ',NUMBER);
        END;
        START_COL = NUMBER;
```

```
         END;
 /*                                                                      */
 /*  IF THE LIST COMMAND IS FOUND THE SAME PROCEDURE IS USED AS          */
 /*  WITH THE SHIFT COMMAND.                                             */
 /*                                                                      */
         ELSE IF NUMBER='L'|NUMBER='LI'|NUMBER='LIS'|NUMBER='LIST'
         THEN DO;
           NUMBER = PEAL(ANSWER);
           CALL DATATP(NUMBER,CHAR_TYP);
           IF CHAR_TYP = 'CHAR' THEN DO;
             PUT FILE(SCREEN) EDIT
               ('ENTER THE ROW NUMBER :') (SKIP,A);
             CALL INPUT('INT ',NUMBER);
           END;
           START_ROW = NUMBER;
         END;
 /*                                                                      */
 /*  IF THE HELP COMMAND IS FOUND, SHOW HELP INFO,                       */
 /*  THEN REWRITE SCREEN.                                                */
 /*                                                                      */
         ELSE IF NUMBER='H'|NUMBER='HE'|NUMBER='HEL'|NUMBER='HELP'
         THEN DO;
           PUT FILE(SCREEN) EDIT
             ('MATRIX WINDOW - 12 ROWS, OR NUMBER OF ROWS IN MATRIX ',
              'IF LESS THAN 12.','THE NUMBER OF COLUMNS DEPEND ON THE ',
              'DATA REQUIREMENTS FOR','EACH MATRIX.')
             (SKIP(5),A,A,SKIP,X(5),A,A,SKIP,X(5),A);
           PUT FILE(SCREEN) EDIT
             ('EDITING - TO EDIT THE PORTION OF THE MATRIX DISPLAYED IN ',
              'THE WINDOW,','TYPE THE ASTERISK (*) AND ROW NUMBER, WITH ',
              'A SPACE BETWEEN THEM.','FOLLOW WITH THE DATA TO BE ',
              'ENTERED.') (SKIP,A,A,SKIP,X(5),A,A,SKIP,X(5),A,A);
           PUT FILE(SCREEN) EDIT
             ('USE THE FOLLOWING COMMANDS TO DISPLAY EDITED DATA ',
              'AND/OR ADJUST','THE MATRIX WINDOW.') (SKIP(2),A,A,SKIP,A);
           PUT FILE(SCREEN) EDIT
             ('SHIFT - USE TO INDICATE FIRST COLUMN OF MATRIX WINDOW.',
              'EX:  "SHIFT 10" BEGINS MATRIX DISPLAY WITH COLUMN 10.')
             (SKIP,A,SKIP,X(5),A);
           PUT FILE(SCREEN) EDIT
             ('LIST - USE TO INDICATE FIRST ROW OF MATRIX WINDOW.',
              'EX:  "LIST 13" BEGINS MATRIX DISPLAY WITH ROW 13.')
             (SKIP,A,SKIP,X(5),A);
           PUT FILE(SCREEN) EDIT
             ('END - USE TO END EDIT OF CURRENT MATRIX DATA.')
              (SKIP,A);
           PUT FILE(SCREEN) EDIT
             ('EX:  SITUATION - MATRIX WINDOW CURRENTLY BEGINS AT ROW ',
              '1, COLUMN 1.','TO EDIT THE ELEMENT AT ROW 13, COLUMN ',
              '10 -','DO THE FOLLOWING (EACH LINE INDICATES A ',
              'SEPERATE COMMAND):','LIST 13','SHIFT 10','* 13 50.1',
              'TO EDIT SEVERAL CONSECUTIVE ELEMENTS ON A ROW, ',
              'SEPARATE EACH BY A','COMMA OR SPACE AS SHOWN BELOW:',
              '* 13 50.1,50.0 49.8')
             (SKIP(2),A,A,SKIP,A,A,SKIP,A,A,3(SKIP,X(5),A),SKIP,A,A,SKIP,
              A,SKIP,X(5),A);
           C_FLAG = '0'B;
         END;
 /*                                                                      */
 /*  IF NEITHER LIST,LOCATE,SHIFT OR END IS FOUND THEN AN ERROR          */
 /*  MSG IS PRINTED WHEN THE MATRIX IS RESHOWN                           */
 /*                                                                      */
       ELSE BAD_INFO = 'INVALID COMMAND.' ;
     END;
 /*                                                                      */
 /*  CHECK TO SEE IF A COMMAND WAS ENTERED                               */
```

```
/*                                                                     */
   LV: IF C_FLAG THEN DO;
/*                                                                     */
/*  SET START_COL,START_ROW,END_COL,END_ROW TO THERE VALID VALUES      */
/*                                                                     */
       IF START_COL < 1 THEN START_COL = 1;
       IF START_COL > COL_SIZE THEN START_COL = COL_SIZE ;
       END_COL = START_COL + NUMBER_OF_FIELDS - 1;
       IF END_COL > COL_SIZE THEN END_COL = COL_SIZE;
       IF START_ROW < 1 THEN START_ROW = 1;
       IF START_ROW > ROW_SIZE THEN START_ROW = COL_SIZE ;
       END_ROW = START_ROW + 11;
       IF END_ROW > ROW_SIZE THEN END_ROW = ROW_SIZE;
/*                                                                     */
/*  REWRITE THE MATRIX ON THE SCREEN AND RESET COMMAND FLAG            */
/*                                                                     */
      CALL WRTSCRN;
   END;
   ELSE /* C_FLAG = 'O'B */
      PUT FILE(SCREEN) EDIT('@ COMMAND :') (SKIP(2),A);
 END;

 PEAL: PROC(STRING)                 RETURNS(CHAR(80) VAR);
/*                                                                     */
/*  THIS PROC LOOKS FOR THE FIRST BLANK AND REMOVES ALL OF THE         */
/*  STRING IN FRONT OF IT. IT THEN DEBLANKS THE SHORTTENED STRING.     */
/*  IT THEN RETURNS THE SHORTTENED STRING AND THE "SKIN" IT            */
/*  REMOVED.                                                           */
/*                                                                     */
   DCL STRING                       CHAR(80) VAR,
       SKIN                         CHAR(80) VAR;
   DCL DBLANK  ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
   STRING = DBLANK(STRING);
   IF INDEX(STRING,' ') = O THEN DO;
     SKIN = STRING;
     STRING = '';
     RETURN(SKIN);
   END;
   SKIN = SUBSTR(STRING,1,INDEX(STRING,' ')-1);
   SKIN = DBLANK(SKIN);
   STRING = SUBSTR(STRING,INDEX(STRING,' ')+1);
   STRING = DBLANK(STRING);
   RETURN(SKIN);
 END;

 WRTSCRN: PROC;
/*                                                                     */
/*  THE FOLLOWING PROCEDURE WRITES THE ARRARY TO THE SCREEN IN         */
/*  THE CORRECT FORMAT FOR THAT TERMINAL IN WHICH THE USER IS          */
/*  WORKING ON                                                         */
/*                                                                     */
/*                                                                     */
   DCL I                       FIXED BIN,
       SPACE                   FIXED BIN,
       J                       FIXED BIN;
   SPACE = FLOOR(FLOAT(FMT_SIZE)/2.);
   PUT FILE(SCREEN) EDIT('C  O  L  U  M  N  S') (COL(29),A);
   IF FMT_SIZE=1 THEN DO;
     PUT FILE(SCREEN) EDIT
       (' ROWS',(I  DO I=START_COL TO END_COL))
       (SKIP,A,40(F(2)));
     DO I=START_ROW TO END_ROW;
       PUT FILE(SCREEN) EDIT
         (' *',I,(MATRIX(I,J) DO J=START_COL TO END_COL))
         (SKIP,A,F(2),X(2),40(A(2)));
     END;
```

```
        END;
        ELSE IF FMT_SIZE=3 THEN DO;
          PUT FILE(SCREEN) EDIT
            (' ROWS',(I  DO I=START_COL TO END_COL))
            (SKIP,A,X(1),40(F(2),X(2)));
          DO I=START_ROW TO END_ROW;
            PUT FILE(SCREEN) EDIT
              (' *',I,(MATRIX(I,J) DO J=START_COL TO END_COL))
              (SKIP,A,F(2),X(2),40(A(4)));
          END;
        END;
        ELSE /* FMT_SIZE=4 */ DO;
          PUT FILE(SCREEN) EDIT
            (' ROWS',(I  DO I=START_COL TO END_COL))
            (SKIP,A,X(2),40(F(2),X(3)));
          DO I=START_ROW TO END_ROW;
            PUT FILE(SCREEN) EDIT
              (' *',I,(MATRIX(I,J) DO J=START_COL TO END_COL))
              (SKIP,A,F(2),X(2),40(A(5)));
          END;
        END;
        PUT FILE(SCREEN) EDIT(
          'REMEMBER TO HIT ENTER AFTER YOU CHANGE EACH LINE.',
          'COMMANDS ARE: SHIFT,LIST,HELP,END')
          (2(SKIP,A));
        PUT FILE(SCREEN) EDIT(BAD_INFO) (SKIP,A);
        PUT FILE(SCREEN) EDIT('@ COMMAND :') (SKIP,A);
        C_FLAG = '0'B;
        BAD_INFO = '';
      END;
    END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                              (SUBFIL  )
 SUBFIL: PROC;
 /* THE SUBFILE SUBROUTINE IS USED TO WRITE THE DATA TO THE
    INPUT DATA SET FOR IBM 3081.
 */
 /********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.     */
 %INCLUDE 'B:EXTVAR.PLI';
 /********************************************/
   DCL COUNT                       FIXED BIN,
       TEMP_NUM1                   FIXED BIN,
       TEMP_NUM2                   FIXED BIN,
       I                           FIXED BIN,
       J                           FIXED BIN,
       K                           FIXED BIN,
       L                           FIXED BIN,
       COUNT1                      FIXED BIN;
  DCL DBLANK ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
  DO I=1 TO 16;
    PUT FILE(SYSUT4) EDIT(JCL(I)) (COL(1),A(80));
  END;
  PUT FILE(SYSUT4) EDIT(TITLE) (COL(1),A(80));
  PUT FILE(SYSUT4) EDIT(NTIM(1),NPMP,NX,NY,NPMAX,NPNT(1),NITP(1),
                    NUMOBS,ITMAX(1),NREC(1),NPTPND,NCODES,
                    NPNTMV(1),NPNTVL(1),NPNTD(1),NPDELC(1),NPNCHV(1))
                   (COL(1),17(A(4)));
  PUT FILE(SYSUT4) EDIT(PINT(1),TOL,POROS,BETA,S,TIMX(1),TINIT(1),
                    XDEL,YDEL,DLTRAT,CELDIS,ANFCTR)
                   (COL(1),12(A(5)));
  PUT FILE(SYSUT4) EDIT(NDECAY,NSORB,DCYTIM,DENROC,SORBOR,SORBST,
                    SORBAL)(COL(1),2(A(5)),5(A(10)));
  PUT FILE(SYSUT4) EDIT(ISOLV,IHEAD,FCON,TP,BTM)(COL(1),5(A(4)));
  COUNT = 0;
  TEMP_NUM1 = DBLANK(NUMOBS);
  DO WHILE(COUNT < TEMP_NUM1);
    COUNT = COUNT + 1;
    PUT FILE(SYSUT4) EDIT(IXOBS(COUNT),IYOBS(COUNT))
                      (COL(1),2(A(2)));
  END;
  COUNT = 0;
  TEMP_NUM1 = DBLANK(NREC(1));
  DO WHILE(COUNT < TEMP_NUM1);
    COUNT = COUNT + 1;
    PUT FILE(SYSUT4) EDIT(IX(1,COUNT),IY(1,COUNT),
                      REC(1,COUNT),CNRECH(1,COUNT))
                     (COL(1),2(A(2)),2(A(8)));
  END;
  PUT FILE(SYSUT4) EDIT(INPT_VPRM,FACT_VPRM)
                   (COL(1),A(1),A(10));
  IF INPT_VPRM ¬= 0 THEN DO;
    I = DBLANK(NX);
    J = DBLANK(NY);
    DO K=1 TO J;
      PUT FILE(SYSUT4) EDIT(VPRM(K,1)) (COL(1),A(4));
      DO L=2 TO I;
        PUT FILE(SYSUT4) EDIT(VPRM(K,L)) (A(4));
      END;
    END;
  END;
  PUT FILE(SYSUT4) EDIT(INPT_THCK,FACT_THCK)
                   (COL(1),A(1),A(10));
  IF INPT_THCK ¬= 0 THEN DO;
    I = DBLANK(NX);
    J = DBLANK(NY);
    DO K=1 TO J;
      PUT FILE(SYSUT4) EDIT(THCK(K,1)) (COL(1),A(3));
      DO L=2 TO I;
        PUT FILE(SYSUT4) EDIT(THCK(K,L)) (A(3));
      END;
    END;
  END;
  PUT FILE(SYSUT4) EDIT(INPT_WT,FACT_WT)
                   (COL(1),A(1),A(10));
  IF INPT_WT ¬= 0 THEN DO;
    I = DBLANK(NX);
    J = DBLANK(NY);
    DO K=1 TO J;
      PUT FILE(SYSUT4) EDIT(WT(K,1)) (COL(1),A(4));
      DO L=2 TO I;
        PUT FILE(SYSUT4) EDIT(WT(K,L)) (A(4));
      END;
    END;
  END;
  PUT FILE(SYSUT4) EDIT(INPT_RECH,FACT_RECH)
                   (COL(1),A(1),A(10));
  IF INPT_RECH ¬= 0 THEN DO;
    I = DBLANK(NX);
    J = DBLANK(NY);
    DO K=1 TO J;
      PUT FILE(SYSUT4) EDIT(RECH(K,1)) (COL(1),A(4));
      DO L=2 TO I;
        PUT FILE(SYSUT4) EDIT(RECH(K,L)) (A(4));
      END;
    END;
  END;
  PUT FILE(SYSUT4) EDIT(INPT_NODEID,FACT_NODEID)
                   (COL(1),A(1),A(10));
  IF INPT_NODEID ¬= 0 THEN DO;
    I = DBLANK(NX);
    J = DBLANK(NY);
    DO K=1 TO J;
      PUT FILE(SYSUT4) EDIT(NODEID(K,1)) (COL(1),A(1));
      DO L=2 TO I;
        PUT FILE(SYSUT4) EDIT(NODEID(K,L)) (A(1));
      END;
    END;
  END;
  COUNT = 0;
  TEMP_NUM1 = DBLANK(NCODES);
  DO WHILE(COUNT < TEMP_NUM1);
    COUNT = COUNT + 1;
    PUT FILE(SYSUT4) EDIT(ICODE(COUNT),FCTR1(COUNT),FCTR2(COUNT),
                      FCTR3(COUNT),OVERRD(COUNT))
                     (COL(1),A(2),3(A(10)),A(2));
  END;
  PUT FILE(SYSUT4) EDIT(INPT_CONC,FACT_CONC)
                   (COL(1),A(1),A(10));
  IF INPT_CONC ¬= 0 THEN DO;
    I = DBLANK(NX);
    J = DBLANK(NY);
    DO K=1 TO J;
      PUT FILE(SYSUT4) EDIT(CONC(K,1)) (COL(1),A(4));
      DO L=2 TO I;
        PUT FILE(SYSUT4) EDIT(CONC(K,L)) (A(4));
      END;
    END;
  END;
  COUNT = 1 ;
  TEMP_NUM1 = DBLANK(NPMP);
  DO WHILE(COUNT < TEMP_NUM1);
    COUNT = COUNT + 1;
    PUT FILE(SYSUT4) EDIT(ICHK(COUNT-1)) (COL(1),A(1));
    IF ICHK(COUNT-1) = 1 THEN DO;
      PUT FILE(SYSUT4) EDIT(NTIM(COUNT),NPNT(COUNT),NITP(COUNT),
                         ITMAX(COUNT),
                         NREC(COUNT),NPNTMV(COUNT),NPNTVL(COUNT),
                         NPNTD(COUNT),NPDELC(COUNT),NPNCHV(COUNT),
                         PINT(COUNT),TIMX(COUNT),TINIT(COUNT))
                        (COL(1),10(A(4)),3(A(5)));
      COUNT1 = 0;
      TEMP_NUM2 = DBLANK(NREC(COUNT));
      DO WHILE(COUNT1 < NREC(COUNT));
        COUNT1 = COUNT1 + 1;
        PUT FILE(SYSUT4) EDIT(IX(COUNT,COUNT1),IY(COUNT,COUNT1),
                          REC(COUNT,COUNT1),CNRECH(COUNT,COUNT1))
                         (COL(1),2(A(2)),2(A(8)));
      END;
    END;
  END;
  CLOSE FILE(SYSUT4);
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                    (SUBFILM )
 SUBFILM: PROC;
 /* THE SUBFILE SUBROUTINE IS USED TO WRITE THE DATA TO THE
    INPUT DATA SET ON MICROCOMPUTER.
 */
 /**********************************************/
 /* %INCLUDE REQUIRES COMPLETE FILE NAME.        */
 %INCLUDE 'B:EXTVAR.PLI';
 /**********************************************/
   DCL COUNT                          FIXED BIN,
       TEMP_NUM1                      FIXED BIN,
       TEMP_NUM2                      FIXED BIN,
       I                              FIXED BIN,
       J                              FIXED BIN,
       K                              FIXED BIN,
       L                              FIXED BIN,
       COUNT1                         FIXED BIN;
   DCL DBLANK ENTRY (CHAR(80) VAR) RETURNS(CHAR(80) VAR);
   PUT FILE(SYSUT4) EDIT(TITLE) (COL(1),A(80));
   PUT FILE(SYSUT4) EDIT(NTIM(1),NPMP,NX,NY,NPMAX,NPNT(1),NITP(1),
                     NUMOBS,ITMAX(1),NREC(1),NPTPND,NCODES,
                     NPNTMV(1),NPNTVL(1),NPNTD(1),NPDELC(1),NPNCHV(1))
                    (COL(1),17(A(4)));
   PUT FILE(SYSUT4) EDIT(PINT(1),TOL,POROS,BETA,S,TIMX(1),TINIT(1),
                     XDEL,YDEL,DLTRAT,CELDIS,ANFCTR)
                    (COL(1),12(A(5)));
   PUT FILE(SYSUT4) EDIT(NDECAY,NSORB,DCYTIM,DENROC,SORBQR,SORBST,
                     SORBAL)(COL(1),2(A(5)),5(A(10)));
   PUT FILE(SYSUT4) EDIT(ISOLV,IHEAD,FCON,TP,BTM)(COL(1),5(A(4)));
   COUNT = 0;
   TEMP_NUM1 = DBLANK(NUMOBS);
   DO WHILE(COUNT < TEMP_NUM1);
     COUNT = COUNT + 1;
     PUT FILE(SYSUT4) EDIT(IXOBS(COUNT),IYOBS(COUNT))
                      (COL(1),2(A(2)));
   END;
   COUNT = 0;
   TEMP_NUM1 = DBLANK(NREC(1));
   DO WHILE(COUNT < TEMP_NUM1);
     COUNT = COUNT + 1;
     PUT FILE(SYSUT4) EDIT(IX(1,COUNT),IY(1,COUNT),
                       REC(1,COUNT),CNRECH(1,COUNT))
                      (COL(1),2(A(2)),2(A(8)));
   END;
   PUT FILE(SYSUT4) EDIT(INPT_VPRM,FACT_VPRM)
                    (COL(1),A(1),A(10));
   IF INPT_VPRM ¬= 0 THEN DO;
     I = DBLANK(NX);
     J = DBLANK(NY);
     DO K=1 TO J;
       PUT FILE(SYSUT4) EDIT(VPRM(K,1)) (COL(1),A(4));
       DO L=2 TO I;
         PUT FILE(SYSUT4) EDIT(VPRM(K,L)) (A(4));
       END;
     END;
   END;
   PUT FILE(SYSUT4) EDIT(INPT_THCK,FACT_THCK)
                    (COL(1),A(1),A(10));
   IF INPT_THCK ¬= 0 THEN DO;
     I = DBLANK(NX);
     J = DBLANK(NY);
     DO K=1 TO J;
       PUT FILE(SYSUT4) EDIT(THCK(K,1)) (COL(1),A(3));
    DO L=2 TO I;
      PUT FILE(SYSUT4) EDIT(THCK(K,L)) (A(3));
    END;
  END;
END;
PUT FILE(SYSUT4) EDIT(INPT_WT,FACT_WT)
                 (COL(1),A(1),A(10));
IF INPT_WT ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    PUT FILE(SYSUT4) EDIT(WT(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      PUT FILE(SYSUT4) EDIT(WT(K,L)) (A(4));
    END;
  END;
END;
PUT FILE(SYSUT4) EDIT(INPT_RECH,FACT_RECH)
                 (COL(1),A(1),A(10));
IF INPT_RECH ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    PUT FILE(SYSUT4) EDIT(RECH(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      PUT FILE(SYSUT4) EDIT(RECH(K,L)) (A(4));
    END;
  END;
END;
PUT FILE(SYSUT4) EDIT(INPT_NODEID,FACT_NODEID)
                 (COL(1),A(1),A(10));
IF INPT_NODEID ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    PUT FILE(SYSUT4) EDIT(NODEID(K,1)) (COL(1),A(1));
    DO L=2 TO I;
      PUT FILE(SYSUT4) EDIT(NODEID(K,L)) (A(1));
    END;
  END;
END;
COUNT = 0;
TEMP_NUM1 = DBLANK(NCODES);
DO WHILE(COUNT < TEMP_NUM1);
  COUNT = COUNT + 1;
  PUT FILE(SYSUT4) EDIT(ICODE(COUNT),FCTR1(COUNT),FCTR2(COUNT),
                        FCTR3(COUNT),OVERRD(COUNT))
                   (COL(1),A(2),3(A(10)),A(2));
END;
PUT FILE(SYSUT4) EDIT(INPT_CONC,FACT_CONC)
                 (COL(1),A(1),A(10));
IF INPT_CONC ¬= 0 THEN DO;
  I = DBLANK(NX);
  J = DBLANK(NY);
  DO K=1 TO J;
    PUT FILE(SYSUT4) EDIT(CONC(K,1)) (COL(1),A(4));
    DO L=2 TO I;
      PUT FILE(SYSUT4) EDIT(CONC(K,L)) (A(4));
    END;
  END;
END;
COUNT = 1 ;
TEMP_NUM1 = DBLANK(NPMP);
DO WHILE(COUNT < TEMP_NUM1);
  COUNT = COUNT + 1;
  PUT FILE(SYSUT4) EDIT(ICHK(COUNT-1)) (COL(1),A(1));
```

```
    IF ICHK(COUNT-1) = 1 THEN DO;
      PUT FILE(SYSUT4) EDIT(NTIM(COUNT),NPNT(COUNT),NITP(COUNT),
                        ITMAX(COUNT),
                        NREC(COUNT),NPNTMV(COUNT),NPNTVL(COUNT),
                        NPNTD(COUNT),NPDELC(COUNT),NPNCHV(COUNT),
                        PINT(COUNT),TIMX(COUNT),TINIT(COUNT))
                       (COL(1),10(A(4)),3(A(5)));
      COUNT1 = 0;
      TEMP_NUM2 = DBLANK(NREC(COUNT));
      DO WHILE(COUNT1 < NREC(COUNT));
        COUNT1 = COUNT1 + 1;
        PUT FILE(SYSUT4) EDIT(IX(COUNT,COUNT1),IY(COUNT,COUNT1),
                          REC(COUNT,COUNT1),CNRECH(COUNT,COUNT1))
                         (COL(1),2(A(2)),2(A(8)));
      END;
    END;
  END;
  CLOSE FILE(SYSUT4);
END;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                    (EXTVAR   )
 %REPLACE NX_LMT BY 20,
          NY_LMT BY 20,
          PMP_LMT BY 20,
          NR_LMT BY 50,
          NC_LMT BY 10,
          OBS_LMT BY 5;
   /* CARD 1 */
   DCL TITLE                    CHAR(80) VAR EXTERNAL;
   /* CARD 2 */
   DCL NTIM(PMP_LMT)                 CHAR(4) EXTERNAL,
       NPMP                     CHAR(4) EXTERNAL,
       NX                       CHAR(4) EXTERNAL,
       NY                       CHAR(4) EXTERNAL,
       NPMAX                    CHAR(4) EXTERNAL,
       NPNT(PMP_LMT)                 CHAR(4) EXTERNAL,
       NITP(PMP_LMT)                 CHAR(4) EXTERNAL,
       NUMOBS                   CHAR(4) EXTERNAL,
       ITMAX(PMP_LMT)                CHAR(4) EXTERNAL,
       NREC(NR_LMT)                CHAR(4) EXTERNAL,
       NPTPND                   CHAR(4) EXTERNAL,
       NCODES                   CHAR(4) EXTERNAL,
       NPNTMV(PMP_LMT)               CHAR(4) EXTERNAL,
       NPNTVL(PMP_LMT)               CHAR(4) EXTERNAL,
       NPNTD(PMP_LMT)                CHAR(4) EXTERNAL,
       NPDELC(PMP_LMT)               CHAR(4) EXTERNAL,
       NPNCHV(PMP_LMT)               CHAR(4) EXTERNAL;
  /* CARD 3 */
  DCL PINT(PMP_LMT)                  CHAR(5) EXTERNAL,
      TOL                       CHAR(5) EXTERNAL,
      POROS                     CHAR(5) EXTERNAL,
      BETA                      CHAR(5) EXTERNAL,
      S                         CHAR(5) EXTERNAL,
      TIMX(PMP_LMT)                  CHAR(5) EXTERNAL,
      TINIT(PMP_LMT)                 CHAR(5) EXTERNAL,
      XDEL                      CHAR(5) EXTERNAL,
      YDEL                      CHAR(5) EXTERNAL,
      DLTRAT                    CHAR(5) EXTERNAL,
      CELDIS                    CHAR(5) EXTERNAL,
      ANFCTR                    CHAR(5) EXTERNAL;
 /* CARD 4 */
 DCL NDECAY                     CHAR(5) EXTERNAL,
     NSORB                      CHAR(5) EXTERNAL,
     DCYTIM                     CHAR(10) EXTERNAL,
     DENROC                     CHAR(10) EXTERNAL,
     SORBQR                     CHAR(10) EXTERNAL,
     SORBST                     CHAR(10) EXTERNAL,
     SORBAL                     CHAR(10) EXTERNAL;
 /* CARD 5 */
 DCL ISOLV                      CHAR(4) EXTERNAL,
     IHEAD                      CHAR(4) EXTERNAL,
     FCON                       CHAR(4) EXTERNAL,
     TP                         CHAR(4) EXTERNAL,
     BTM                        CHAR(4) EXTERNAL;
 /* END OF CARD 5 */
 DCL IXOBS(OBS_LMT)                  CHAR(2) EXTERNAL,
     IYOBS(OBS_LMT)                  CHAR(2) EXTERNAL,
     IX(PMP_LMT,NR_LMT)                  CHAR(2) EXTERNAL,
     IY(PMP_LMT,NR_LMT)                  CHAR(2) EXTERNAL,
     REC(PMP_LMT,NR_LMT)                 CHAR(8) EXTERNAL,
     CNRECH(PMP_LMT,NR_LMT)              CHAR(8) EXTERNAL,
     INPT_VPRM                CHAR(1) EXTERNAL,
     FACT_VPRM                 CHAR(10) EXTERNAL,
         VPRM(NX_LMT,NY_LMT)                 CHAR(4) VAR EXTERNAL,
         INPT_THCK                 CHAR(1) EXTERNAL,
         FACT_THCK                  CHAR(10) EXTERNAL,
         THCK(NX_LMT,NY_LMT)                 CHAR(4) VAR EXTERNAL,
         INPT_RECH                 CHAR(1) EXTERNAL,
         FACT_RECH                  CHAR(10) EXTERNAL,
         RECH(NX_LMT,NY_LMT)                 CHAR(4) VAR EXTERNAL,
         INPT_NODEID               CHAR(1) EXTERNAL,
         FACT_NODEID                CHAR(10) EXTERNAL,
         NODEID(NX_LMT,NY_LMT)               CHAR(4) VAR EXTERNAL,
         ICODE(NC_LMT)                   CHAR(2) EXTERNAL,
         FCTR1(NC_LMT)                   CHAR(10) EXTERNAL,
         FCTR2(NC_LMT)                   CHAR(10) EXTERNAL,
         FCTR3(NC_LMT)                   CHAR(10) EXTERNAL,
         OVERRD(NC_LMT)                  CHAR(2) EXTERNAL,
         INPT_WT                   CHAR(1) EXTERNAL,
         FACT_WT                    CHAR(10) EXTERNAL,
         WT(NX_LMT,NY_LMT)                   CHAR(4) VAR EXTERNAL,
         INPT_CONC                 CHAR(1) EXTERNAL,
         FACT_CONC                  CHAR(10) EXTERNAL,
         CONC(NX_LMT,NY_LMT)                 CHAR(4) VAR EXTERNAL,
         ICHK(0:PMP_LMT)                  CHAR(1) EXTERNAL;
 DCL  JCL(16)                      CHAR(80) VAR EXTERNAL;
 DCL  VERIFY                       FIXED BIN EXTERNAL;
 DCL  SCREEN                       FILE,
      CRT                          FILE,
      SYSUT4                       FILE,                /* RUN FILE */
      JCLF                         FILE,                /* JCL FILE */
      FILENM                       CHAR(80) VAR EXTERNAL;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                   (PARMGT   )
   PARMGT: PROC                       RETURNS(CHAR(80) VAR);
     DCL VAR                          CHAR(80) VAR,
         VAR1                         CHAR(80) VAR,
         STR                          CHAR(100) STATIC INIT('    '),
         COUNTER                      FIXED BIN;
     DCL INPUT                 ENTRY (CHAR(4),CHAR(80) VAR),
         INPUTR                ENTRY (CHAR(4),CHAR(80) VAR,FLOAT,FLOAT);
     COUNTER = 1 ;
     DO WHILE(VAR_INFO(COUNTER) ¬= ' ');
       PUT FILE(SCREEN) EDIT(VAR_INFO(COUNTER)) (SKIP,A);
       VAR_INFO(COUNTER) = '';
       COUNTER = COUNTER + 1;
     END;
   REENTR:
     IF LOWER_RANGE = UPPER_RANGE THEN
       CALL INPUT(TYPE,VAR);
     ELSE CALL INPUTR(TYPE,VAR,LOWER_RANGE,UPPER_RANGE);
     IF TYPE ¬= 'CHAR' & TYPE ¬= 'ANS ' THEN DO;
       IF LENGTH(VAR) < LEN THEN
          VAR = SUBSTR(STR,1,
                (LEN-LENGTH(VAR))) || VAR ;
       IF LENGTH(VAR) > LEN THEN DO;
         PUT FILE(SCREEN) EDIT
          ('RESPONSE TOO LONG--LENGTH MUST BE <= ',LEN)(SKIP,A,F(4));
         PUT FILE(SCREEN) EDIT
          ('PLEASE REENTER :')(SKIP,A);
         GOTO REENTR;
       END;
     END;
     IF (VERIFY=1) THEN DO;
       PUT FILE(SCREEN) EDIT ('VERIFY (Y/N):') (SKIP,A);
       CALL INPUT('ANS',VAR1);
       IF VAR1¬='Y' THEN DO;
         PUT FILE(SCREEN) EDIT ('THEN PLEASE REENTER :')(SKIP,A);
         GOTO REENTR;
       END;
     END;
     UPPER_RANGE = 0;
     LOWER_RANGE = 0;
     RETURN(VAR);
  END ;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                        (KONI     )

 KONI: PROC OPTIONS(MAIN);
/* CONTROLLING PROGRAM.  CREATES JCL FOR IBM 3081. */
   DCL CHOOSE                         CHAR(1),
       FLAG_ON    .                   BIT(1) STATIC INIT('1'B);
   DCL CREATE                         ENTRY,
       UPDATE                         ENTRY;
     PUT EDIT(
       '            MODIFIED N.R.C. VERSION',
       'OF THE U.S.G.S. SOLUTE TRANSPORT MODEL,',
       ' VOLUME 2:  INTERACTIVE PREPROCESSOR',
       '                     BY',
       'D.C. KENT, L. LEMASTER, AND J. WAGNER',
       '                     FOR',
       ' U.S. ENVIRONMENTAL PROTECTION AGENCY')(7(SKIP,A));
   DO WHILE (FLAG_ON);
     PUT EDIT('CHOOSE ACTION: ',
              '    1) CREATE NEW DATA',
              '    2) MODIFY EXISTING DATA',
              '    3) END PROGRAM',
              '(ENTER CORRESPONDING NUMBER): ')
        (SKIP(3),A,4(SKIP,A));
     GET EDIT(CHOOSE)(A);
     IF CHOOSE = '1' THEN CALL CREATE;
     ELSE IF CHOOSE = '2' THEN CALL UPDATE;
     ELSE IF CHOOSE = '3' THEN FLAG_ON = '0'B;
     ELSE PUT EDIT('IMPROPER RESPONSE--TRY AGAIN.')(SKIP(2),A);
   END;
END; /* KONI */
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                       (KONIM    )
 KONI: PROC OPTIONS(MAIN);
/* CONTROLLING PROGRAM.  CREATES JCL FOR MICROCOMPUTER. */
   DCL CHOOSE                          CHAR(1),
       FLAG_ON                         BIT(1) STATIC INIT('1'B);
   DCL CREATEM                         ENTRY,
       UPDATEM                         ENTRY;
     PUT EDIT(
       '             MODIFIED N.R.C. VERSION',
       'OF THE U.S.G.S. SOLUTE TRANSPORT MODEL.',
       ' VOLUME 2:  INTERACTIVE PREPROCESSOR',
       '                     BY',
       'D.C. KENT, L. LEMASTER, AND J. WAGNER',
       '                     FOR',
       ' U.S. ENVIRONMENTAL PROTECTION AGENCY')(7(SKIP,A));
  DO WHILE (FLAG_ON);
    PUT EDIT('CHOOSE ACTION: ',
             '     1) CREATE NEW DATA',
             '     2) MODIFY EXISTING DATA',
             '     3) END PROGRAM',
             '(ENTER CORRESPONDING NUMBER): ')
        (SKIP(3),A,4(SKIP,A));
    GET EDIT(CHOOSE)(A);
    IF CHOOSE = '1' THEN CALL CREATEM;
    ELSE IF CHOOSE = '2' THEN CALL UPDATEM;
    ELSE IF CHOOSE = '3' THEN FLAG_ON = '0'B;
    ELSE PUT EDIT('IMPROPER RESPONSE - TRY AGAIN.')(SKIP(2),A);
  END;
END; /* KONI */
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.K2.CNTL
                                                        (KONID    )
 KONID: PROC OPTIONS(MAIN);
 /* CONTROLLING PROGRAM.  CREATES JCL FOR DEC/VAX. */
   DCL CHOOSE                        CHAR(1),
       FLAG_ON                       BIT(1) STATIC INIT('1'B);
   DCL CREATED                       ENTRY,
       UPDATED                       ENTRY;
     PUT EDIT(
       '          MODIFIED N.R.C. VERSION',
       'OF THE U.S.G.S. SOLUTE TRANSPORT MODEL,',
       ' VOLUME 2:  INTERACTIVE PREPROCESSOR',
       '                    BY',
       'D.C. KENT, L. LEMASTER, AND J. WAGNER',
       '                    FOR',
       ' U.S. ENVIRONMENTAL PROTECTION AGENCY')(7(SKIP,A));
  DO WHILE (FLAG_ON);
    PUT EDIT('CHOOSE ACTION: ',
             '     1) CREATE NEW DATA',
             '     2) MODIFY EXISTING DATA',
             '     3) END PROGRAM',
             '(ENTER CORRESPONDING NUMBER): ')
        (SKIP(3),A,4(SKIP,A));
    GET EDIT(CHOOSE)(A);
    IF CHOOSE = '1' THEN CALL CREATED;
    ELSE IF CHOOSE = '2' THEN CALL UPDATED;
    ELSE IF CHOOSE = '3' THEN FLAG_ON = '0'B;
    ELSE PUT EDIT('IMPROPER RESPONSE--TRY AGAIN.')(SKIP(2),A);
  END;
END; /* KONID */
```

APPENDIX II

DEFINITION OF SELECTED PL/1 PROGRAM VARIABLES

ANSWER	Contains identifier, ANS; except in GTJCL and EDJCL, then receives the results from INPUT.
ANSWER1	Character variable that receives the results from INPUT.
C_FLAG	Indicates a MATRXED command was received.
CHARACTER	Character variable that contains identifier, CHAR.
COL	Represents the columns of F_S_A in DATATYP.
COL_SIZE	Number of columns in MATRIX array in MATRXED.
COMPLETE	Indicates when the data received is accepted in INPUT.
COUNT, COUNT1, COUNTER, COUNTER1	Used as incremental counters for multiple pumping periods, NUMOBS, NREC, NCODES, etc.
CRT	Identifier for terminal to provide input.
CURRENT_ROW	Pointer to row in MATRIX array being modified in MATRXED.
END_COL	Current pointer to last column of MATRIX to be displayed in MATRXED.
END_ROW	Current pointer to last row of MATRIX to be displayed in MATRXED.
FLAG	Indicates if entry to INPUT occurred at the external entry point, INPUTR.
FMT_SIZE	Length of each element of MATRIX array in MATRXED.
INFO_TYPE, TYPE, TEMP_TYPE, CHAR_TYP	Contains variable identification characteristics.
INTEGER	Character variable that contains the identifier, INT.
LEN	Contains maximum length for response in INPUT.
LEVEL	Represents rows of F_S_A in DATATYP routine.
LINE, STRING, OUT_LINE, IN_LINE	Used in utility routines to receive data passed to the routines.
LOWER_CASE	Contains lower case alphabetic characters.
LOWER_RANGE, LOW_LIMIT, LOW1_LIMIT	Contains minimum value for response in INPUT.
MATRIX	Two-dimensional character array used in MATRXED.

NC_LMT	Maximum number of NCODES. Set by %REPLACE statement in EXTVAR.
NR_LMT	Maximum number of recharges and injection wells. Set by %REPLACE statement in EXTVAR.
NUMBER	Character variable that contains the identifier, NUM; except in MATRXED, then a temporary character variable.
NUMBER_OF_FIELDS	Number of columns to display at a time in MATRXED.
NUMBER1, NUMBER2	Used to translate character data to numeric data.
NX_LMT	Maximum number of nodes in X direction. Set by %REPLACE statement in EXTVAR.
NY_LMT	Maximum number of nodes in Y direction. Set by %REPLACE statement in EXTVAR.
OBS_LMT	Maximum number of nodes in observation wells. Set by %REPLACE statement in EXTVAR.
OLDNUM	Used in EDVAR when number of pumping periods, NREC, NUMOBS, NCODES are changed.
PMP	Contains character value for pumping period being modified in EDVAR.
PMP_LMT	Maximum number of pumping periods. Set by %REPLACE statement in EXTVAR.
REAL	Character variable that contains the identifier, REAL.
REPLY	Receives value from PARMGT.
ROW_SIZE	Number of rows in MATRIX array in MATRXED.
SCREEN	Identifier for terminal to receive output.
SKIN	Substring returned to MATRXED by PEAL.
START_COL	Current pointer to first column of MATRIX to be displayed in MATRXED.
START_ROW	Current pointer to first row of MATRIX to be displayed in MATRXED.
STR	Contains blanks, used when forcing data to the proper format size.
SYSUT4	File identifier for input data set being developed.

TEMPC	Temporary storage for character_data.
TEMPCC	Temporary that contains old character data when pumping periods, NREC, NUMOBS, NCODES are changed.
TEMPN	Temporary storage for numeric data.
TEMP_NUM	Contains integer value for NY in GTMATRX and EDMATRX; otherwise numeric value of data read by INPUT.
TEMP_NUM1	Contains integer value for NX in GTMATRX and EDMATRX; otherwise numeric value of data read by INPUT.
TEMP_NUM2	Integer counter.
TEMPSTR	Used in DATATYP routine to contain string returned from the builtin TRANSLATE routine.
TRANSSTR	Used in DATATYP routine as pattern for use in the builtin TRANSLATE routine.
UPPER_CASE	Contains upper case alphabetic characters.
UPPER_RANGE, UP_LIMIT, UP1_LIMIT	Contains maximum value for response in INPUT.
VAR, VAR1	Receives character data read by INPUT.
VAR_INFO	Character array that contains messages to display on screen.
VERIFY	Integer flag for Verify option.

APPENDIX III

DATA DEFINITIONS AND INPUT FORMATS

Card Image	Column	Format	Variable	Definition
1	1-80	10A8	TITLE	Description of problem
2	1- 4	I4	NTIM	Maximum number of time steps in a pumping period (limit=100)*.
	5- 8	I4	NPMP	Number of pumping periods. Note that if NPMP>1, then data set 10 must be completed. (limit=20)*.
	9-12	I4	NX	Number of nodes in x direction (limit=20)*.
	13-16	I4	NY	Number of nodes in y direction (limit=20)*.
	17-20	I4	NPMAX	Maximum number of particles (limit=3200)*.
	21-24	I4	NPNT	Time-step interval for printing hydraulic and chemical output data.
	25-28	I4	NITP	Number of iteration parameters (usually 4<=NITP<=7).
	29-32	I4	NUMOBS	Number of observation points to be specified in a following data set (limit=5)*.
	33-36	I4	ITMAX	Maximum allowable number of iterations in ADIP or SIP (usually 100 <=ITMAX<=200).
	37-40	I4	NREC	Number of pumping or injection wells to be specified in a following data set (limit=50)*.
	41-44	I4	NPTPND	Initial number of particles per node (options=4,5,8,9).
	45-48	I4	NCODES	Number of node identification codes to be specified in a following data set (limit=10)*.

Card Image	Column	Format	Variable	Definition
	49-52	I4	NPNTMV	Particle movement interval (IMOV) for printing chemical output data. (Specify 0 to print only at end of time steps).
	53-56	I4	NPNTVL	Option for printing computed velocities (0=do not print; 1=print for first time step; 2=print for all time steps).
	57-60	I4	NPNTD	Option for printing computed dispersion equation coefficients (option definition same as for NPNTVL).
	61-64	I4	NPDELC	Option for printing computed changes in concentration (0=do not print; 1=print).
	65-68	I4	NPNCHV	Option to punch velocity data (option definition same as for NPNTVL). When specified, program will punch on unit 7 the velocities at nodes.
3	1- 5	G5.0	PINT	Pumping period in years.
	6-10	G5.0	TOL	Convergence criteria in ADIP (usually TOL<=0.01).
	11-15	G5.0	POROS	Effective porosity.
	16-20	G5.0	BETA	Characteristic length, in feet (=longitudinal dispersivity).
	21-25	G5.0	S	Storage coefficient (set S=0 for steady flow problems).
	26-30	G5.0	TIMX	Time increment multiplier for transient flow problems. TIMX is disregarded if S=0.
	31-35	G5.0	TINIT	Size of initial time step in seconds. TINIT is disregarded if S=0.

Card Image	Column	Format	Variable	Definition
	36-40	G5.0	XDEL	Width of finite-difference cell in x direction, in feet.
	41-45	G5.0	YDEL	Width in finite-difference cell in y direction, in feet.
	46-50	G5.0	DLTRAT	Ratio of transverse to longitudinal dispersivity.
	51-55	G5.0	CELDIS	Maximum cell distance per particle move (value between 0 and 1.0).
	56-60	G5.0	ANFCTR	Ratio of Transmissivity tensors for anisotropic site (T(yy) to T(xx)).
4	1- 5	I5	NDECAY	If NDECAY=1 decay will be simulated, if NDECAY=0 decay will not be simulated.
	6-10	I5	NSORB	If NSORB=1 sorption will be simulated using a linear solver, if NSORB=2 sorption will be simulated using the Langmuir solver, if NSORB=3 sorption will be simulated using the Freundlich solver, if NSORB=0 sorption will not be simulated.
	11-20	F10.0	DCYTIM	If NDECAY=1, DCYTIM=decay half life, in years. If NDECAY=0, DCYTIM=0.
	21-30	F10.0	DENROCK	If NSORB=1,2, or 3, DENROCK=density of aquifer in gm/cm3. If NSORB=0, DENROC=0.
	31-40	F10.0	SORBQR	If NSORB=1,2, OR 3, SORBQR is the value of Kd, in ml/g. If NSORB=0, SORBQR=0.
	41-50	F10.0	SORBST	If NSORB=2, SORBST is the sorbtion saturation value for the Langmuir solver. If NSORB=0, 1, or 3, SORBST=0.

Card Image	Column	Format	Variable	Definition
	51-60	F10.0	SORBAL	If NSORB=3, SORBAL is the value of alpha for the Freundlich isotherm, if NSORB=0,1, or 2, SORBAL=0.
5	1- 4	I4	ISOLV	ISOLV=0 for ADIP algorithm and ISOLV=1 for SIP algorithm.
	5- 8	I4	IHEAD	IHEAD=0 for solute transport simulation. IHEAD=1 for only head simulation.
	9-12	I4	FCON	FCON=0 for confined aquifer simulation. FCON=1 for unconfined aquifer simulation.
	13-16	I4	TP	TP=1 for hydraulic conductivity input. TP=0 for transmissivity input.
	17-20	I4	BTM	BTM=1 for bottom elevation input (unconfined aquifer simulation). BTM=0 for saturated thickness input. (BTM=0 if FCON=0.)

See footnotes at end of table.

Data set	Number of card images	Format	Variable	Definition
1	Value of NUMOBS (limit=5)*	2I2	IXOBS, IYOBS	x and y coordinates of observation points. This data set is eliminated if NUMOBS is specified as =0.
2	Value of NREC (limit=50)*	2I2, 2G8.2	IX, IY, REC, CNRECH	x and y coordinates of pumping (+) or injection (-) wells, rate in ft 3/s, and if an injection well, the concentration of injected water. This data set is eliminated if NREC=0.
3	a. 1	I1, G10.0	INPT_VPRM, FACT_VPRM **	
	b. Value of NY times the ceiling of NX/20 (limit=20)*	20G4.1	VPRM	Parameter card for transmissivity or hydraulic conductivity. If TP=0, array for temporary storage of transmissivity data, in ft 2/s. If TP=1, array for temporary storage of hydraulic conductivity data, in ft/s. For an anisotropic aquifer, read in values of T(xx) and the program will adjust for anisotrophy by multiplying T(yy) by ANFCTR.

Data set	Number of card images	Format	Variable	Definition
4	a. 1	I1, G10.0	INPT_THCK, FACT_THCK **	
	b. Value of NY times the ceiling of NX/26 (limit=20)*	26G3.0	THCK	Parameter card for THICK. Saturated thickness or bottom elevation of aquifer, in feet. If BTM=0, array for storage of saturated thickness. If BTM=1, array for temporary storage of bottom elevation.
5	a. 1	I1, G10.0	INPT_WT, FACT_WT **	
	b. Value of NY times the ceiling of NX/20 (limit=20)*	20G4.0	WT	Parameter card for WT. Initial water-table or potentiometric elevation, or constant head in stream or source bed.
6	a. 1	I1, G10.0	INPT_RECH, FACT_RECH **	
	b. Value of NY times the ceiling of NX/20 (limit=20)*	20G4.1	RECH	Parameter card for RECH. Diffuse recharge (-) or discharge (+), in ft/s.
7	a. 1	I1, G10.0	INPT_NODEID, FACT_NODEID **	
	b. Value of NY (limit=20)*	60I1	NODEID	Parameter card for NODEID. Node identification matrix (used to define constant-head nodes or other boundary conditions and stresses).

Data set	Number of card images	Format	Variable	Definition
8	Value of NCODES (limit=10)*	I2, 3G10.2 I2	ICODE,FCTR1, FCTR2,FCTR3, OVERRD	Instructions for using NODEID array. When NODEID=ICODE, program sets leakance=FCTR1, CNRECH=FCTR2, and if OVERRD is nonzero, RECH=FCTR3. Set OVERRD=0 to preserve values of RECH specified in data set 5.
9	a. 1	I1, G10.0	INPT_CONC, FACT_CONC **	
	b. Value of NY times the ceiling of NX/20 (limit=20)*	20G4.0	CONC	Parameter card for CONC. Initial concentration in aquifer.
10				This data set allows time step parameters, print options, and pumpage data to be revised for each pumping period of the simulation. Data set 10 is only used if NPMP >1. The sequence of cards in data set 10 must be repeated (NPMP -1) times (that is, data set 10 is required for each pumping period after the first).

Data set	Number of card images	Format	Variable	Definition
	a. 1	I1	ICHK	Parameter to check whether any revisions are desired. Set ICHK=1 if data are to be revised, and then complete data set 10b and c. Set ICHK=0 if data are not to be revised for the next pumping period, and skip rest of data set 10.
	b. 1	10I4, 3G5.0	NTIM, NPNT, NITP, ITMAX, NREC, NPNTMV, NPNTVL, NPNTD, NPNDELC, NPNCHV, PINT, TIMX, TINIT	Thirteen parameters to be revised for next pumping period; the parameters were previously defined in the description of data cards 2 and 3. Only include this card if ICHK=1 in previous part a.
	c. Value of NREC ++ (limit=50)*	2I2, 2G8.2	IX, IY, REC, CNRECH	Revision of previously defined data set 2. Include part c only if ICHK=1 in previous part a and if NREC>0 in previous part b.

*These limits can be modified if necessary by changing the corresponding array dimensions in the COMMON statements of the program.

++Any wells set during one pumping period continue pumping and injecting during subsequent pumping periods unless the rates are explicitly reset in those subsequent periods.

**The parameter card must be the first card of the indicated data sets. It is used to specify whether the parameter is constant and uniform, and can be defined by one value, or whether it varies in space and must be defined at each node. If INPT_var=0, the data set has a constant value, which is defined by FACT_var. If INPT_var=1, the data set is read from cards as described by part b. Then FACT_var is a multiplication factor for the values read in the data set.

APPENDIX IV

UNITS SUMMARY TABLE

VARIABLE	FIELD UNITS	*	CONVERSION	=	MODEL UNITS
NTIM	-		-		(limit=100)+
NPMP	-		-		-
NX	-		-		(limit=60)+
NY	-		-		(limit=60)+
NPMAX	-		-		(limit=9850)+
NPNT	-		-		-
NITP	-		-		-
NUMOBS	-		-		(limit=5)+
ITMAX	-		-		-
NREC	-		-		-
NPTPND	-		-		-
NCODES	-		-		-
NPNTMV	-		-		-
NPNTVL	-		-		-
NPNTD	-		-		-
NPDELC	-		-		-
NPNCHV	-		-		-
PINT	yrs		-		yrs
TOL	-		-		-
POROS	-		-		-
BETA	-		-		-
S	percent		-		percent
TIMX	-		-		-
TINIT	sec		-		sec
XDEL	ft		-		ft
YDEL	ft		-		ft
DLTRAT	ratio		-		ratio
CELDIS	-		-		betw 0 & 1.0
ANFCTR	ratio		-		ratio
DCYTIM	yrs		-		yrs
DENROCK	gm/cm3		-		gm/cm3
SORBOR	ml/g		-		ml/g
SORBST	-		-		-
SORBAL	-		-		-
ISOLV	-		-		-
IHEAD	-		-		-
FCON	-		-		-
TP	-		-		-
IXOBS	-		-		-
IYOBS	-		-		-
IX	-		-		-
IY	-		-		-
REC	af/y		.001400463		ft3/s
CNRECH	mg/l		-		mg/l
VPRM					
TRANS	gpd/ft		1.54723 E-6		ft2/s
or PERM	gpd/ft2		1.54723 E-6		ft/s
THCK	ft		-		ft
WT	ft		-		ft

VARIABLE	FIELD UNITS	*	CONVERSION	=	MODEL UNITS
RECH	in/yr		26.7918 E-10		ft/s
NODEID	-		-		-
FCTR1	(gpd/ft2)/ft		1.54723 E-6		(ft/s)/ft
FCTR2	mg/l		-		mg/l
FCTR3	in/yr		26.7918 E-10		ft/s
OVERRD	-		-		-
CONC	mg/l		-		mg/l

+These limits may be modified by changing the corresponding array dimensions in the COMMON statements of the program.

APPENDIX V

INPUT AND SELECTED OUTPUT FOR TEST PROBLEMS

APPENDIX V-A

INPUT AND SELECTED OUTPUT FOR TEST PROBLEM 1

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.LONGIS24.CNTL

//U11834C JOB (?????,TSO-TR-KONI),KONIKOWRUN,
//   TIME=(0,40),CLASS=A,
//   MSGCLASS=X,NOTIFY=*
/*PASSWORD ????
/*JOBPARM ROOM=C
//*
//KONI EXEC PGM=KONI60G,REGION=1500K
//STEPLIB  DD DISP=SHR,DSN=U11236C.KONI.LOAD
//FT06F001 DD DSN=U11834C.LONGIS24.OUTLIST,UNIT=STORAGE,
//         SPACE=(TRK,(50,50)),DISP=(MOD,CATLG),
//             DCB=(RECFM=VBA,LRECL=133,BLKSIZE=7448)
//FT10F001 DD DSN=U11834C.LONGIS24.GRAPH,UNIT=STORAGE,
//         SPACE=(TRK,(50,50)),DISP=(MOD,CATLG),
//             DCB=(RECFM=FB,LRECL=80,BLKSIZE=7480)
//FT07F001 DD SYSOUT=B
//FT05F001 DD *
BABYLON,LEVELB,CHLORIDE
   3   1  18  313620    1    7    3 100    4    4    5    0    0    0    1    0          0000000
   10  .01  .25   40.0005    1.1.1E8  500  500   .2   .5    1
    0    0          0          0.         0.         0.         0.
   0    0    1    0    0
 8 4
1016
1026
 829   .0724     0.0
 929   .0724     0.0
1029   .0724     0.0
1129   .0724     0.0
0    0.1447
0      25.
1      1.0
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0    0
   046.646.646.646.646.646.646.646.646.646.646.646.646.646.646.646.6    0
   045.945.945.945.945.945.945.945.945.945.945.945.945.945.945.945.9    0
   045.345.345.345.345.345.345.345.345.345.345.345.345.345.345.345.3    0
   044.544.544.544.544.544.544.544.544.544.544.544.544.544.544.544.5    0
   043.243.243.243.243.243.243.243.243.243.243.243.243.243.243.243.2    0
   041.841.841.841.841.841.841.841.841.841.841.841.841.841.841.841.8    0
   041.441.441.441.441.441.441.441.441.441.441.441.441.441.441.441.4    0
   040.540.540.540.540.540.540.540.540.540.540.540.540.540.540.540.5    0
   039.439.439.439.439.439.439.439.439.439.439.439.439.439.439.439.4    0
   038.738.738.738.738.738.738.738.738.738.738.738.738.738.738.738.7    0
   038.038.038.038.038.038.038.038.038.038.038.038.038.038.038.038.0    0
   036.736.736.736.736.736.736.736.736.736.736.736.736.736.736.736.7    0
   035.735.735.735.735.735.735.735.735.735.735.735.735.735.735.735.7    0
   034.934.934.934.934.934.934.934.934.934.934.934.934.934.934.934.9    0
   033.733.733.733.733.733.733.733.733.733.733.733.733.733.733.733.7    0
   032.832.832.832.832.832.832.832.832.832.832.832.832.832.832.832.8    0
   031.831.831.831.831.831.831.831.831.831.831.831.831.831.831.831.8    0
   030.730.730.730.730.730.730.730.730.730.730.730.730.730.730.730.7    0
   029.729.729.729.729.729.729.729.729.729.729.729.729.729.729.729.7    0
   028.628.628.628.628.628.628.628.628.628.628.628.628.628.628.628.6    0
   027.927.927.927.927.927.927.927.927.927.927.927.927.927.927.927.9    0
   027.327.327.327.327.327.327.327.327.327.327.327.327.327.327.327.3    0
   026.426.426.426.426.426.426.426.426.426.426.426.426.426.426.426.4    0
   025.425.425.425.425.425.425.425.425.425.425.425.425.425.425.425.4    0
   024.824.824.824.824.824.824.824.824.824.824.824.824.824.824.824.8    0
   023.823.823.823.823.823.823.823.823.823.823.823.823.823.823.823.8    0
   022.822.822.822.822.822.822.822.822.822.822.822.822.822.822.822.8    0
   022.322.322.322.322.322.322.322.322.322.322.322.322.322.322.322.3    0
   021.621.621.621.621.621.621.621.621.621.621.621.621.621.621.621.6    0
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0    0
```

```
0      0.0E00
1              1.
0000000000000000000
0222222222222222220
0200000314500000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0200000000000000020
0222222222222222220
0000000000000000000
 2           1.      0           0. 0
 1         .0724   240.0          0. 0
 3         .0724   400.0          0. 0
 4         .0724   350.0          0. 0
 5         .0724   320.0          0. 0
0           0.0
```

```
U.S.G.S. METHOD-OF-CHARACTERISTICS MODEL FOR SOLUTE TRANSPORT IN GROUND WATER
BABYLON,LEVEL8,CHLORIDE
                                                                              0000000
                         I N P U T     D A T A

                          GRID DESCRIPTORS

            NX     (NUMBER OF COLUMNS)  :     18
            NY     (NUMBER OF ROWS)     :     31
            XDEL   (X-DISTANCE IN FEET) :   500.0
            YDEL   (Y-DISTANCE IN FEET) :   500.0

                          TIME  PARAMETERS

            NTIM   (MAX. NO. OF TIME STEPS)         :      3
            NPMP   (NO. OF PUMPING PERIODS)         :      1
            PINT   (PUMPING PERIOD IN YEARS)        :     10.000
            TIMX   (TIME INCREMENT MULTIPLIER)      :      1.00
            TINIT  (INITIAL TIME STEP IN SEC.)      :  0.11E+09

             HYDROLOGIC AND CHEMICAL PARAMETERS

            S       (STORAGE COEFFICIENT)
            POROS   (EFFECTIVE POROSITY)            :      0.000500
            BETA    (CHARACTERISTIC LENGTH)         :      0.25
            DLTRAT  (RATIO OF TRANSVERSE TO         :     40.0
                    LONGITUDINAL DISPERSIVITY)      :      0.20
            ANFCTR  (RATIO OF T-YY TO T-XX)         :      1.000000
***NON-DECAYING SPECIES***

***NON-SORBING SPECIES***

***ADIP USED***

***UNCONFINED AOUIFER***

                         EXECUTION PARAMETERS

            NITP    (NO. OF ITERATION PARAMETERS) :      7
            TOL     (CONVERGENCE CRITERIA - ADIP) :      0.0100
            ITMAX   (MAX.NO.OF ITERATIONS - ADIP) :    100
            CELDIS  (MAX.CELL DISTANCE PER MOVE
                       OF PARTICLES - M.O.C.)     :      0.500
            NPMAX   (MAX. NO. OF PARTICLES)       :   3620
            NPTPND  (NO. PARTICLES PER NODE)      :      4

                          PROGRAM OPTIONS

            NPNT    (TIME STEP INTERVAL FOR
                     COMPLETE PRINTOUT)           :      1
            NPNTMV  (MOVE INTERVAL FOR CHEM.
                     CONCENTRATION PRINTOUT)      :      0
            NPNTVL  (PRINT OPTION-VELOCITY
                     0=NO; 1=FIRST TIME STEP;
                     2=ALL TIME STEPS)            :      0
            NPNTD   (PRINT OPTION-DISP.COEF.
                     0=NO; 1=FIRST TIME STEP;
                     2=ALL TIME STEPS)            :      0
            NUMOBS  (NO. OF OBSERVATION WELLS
                     FOR HYDROGRAPH PRINTOUT)     :      3
            NREC    (NO. OF PUMPING WELLS)        :      4

            NCODES  (FOR NODE IDENT.)             :      5
            NPNCHV  (PUNCH VELOCITIES)            :      0
            NPDELC  (PRINT OPT.-CONC. CHANGE)     :      1
TIME INTERVALS (IN SECONDS)
   0.11000E+09 0.11000E+09 0.11000E+09 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

          LOCATION OF OBSERVATION WELLS

               NO.      X     Y

                1       8     4
                2      10    16
                3      10    26

          LOCATION  OF  PUMPING  WELLS

         X    Y    RATE(IN CFS)   CONC.

         8   29    0.724E-01      0.00
         9   29    0.724E-01      0.00
        10   29    0.724E-01      0.00
        11   29    0.724E-01      0.00

         AREA OF ONE CELL =   2.5000E+05

         X-Y SPACING:
             500.00
             500.00
```

```
AQUIFER THICKNESS (FT)
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
WATER TABLE
    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
    0.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.    0.
    0.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.    0.
    0.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.    0.
    0.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.    0.
    0.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.    0.
    0.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.    0.
    0.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.    0.
    0.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.    0.
    0.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.    0.
    0.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.    0.
    0.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.    0.
    0.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.    0.
    0.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.    0.
    0.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.    0.
    0.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.    0.
    0.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.    0.
    0.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.    0.
    0.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.    0.
    0.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.    0.
    0.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.    0.
    0.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.    0.
    0.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.    0.
    0.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.    0.
    0.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.    0.
    0.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.    0.
    0.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.    0.
    0.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.    0.
    0.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.    0.
    0.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.    0.
    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
```

```
TRANSMISSIVITY MAP (FT*FT/SEC)
 0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
 0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
 1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
 0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
 0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
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PERMEABILTY MAP (FT/SEC)
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03
   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   5.79E-03   0.00E+00
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00


NO. OF FINITE-DIFFERENCE CELLS IN AQUIFER =   464

AREA OF AQUIFER IN MODEL  =   1.16000E+08 SQ. FT.


NZCRIT    (MAX. NO. OF CELLS THAT CAN BE VOID OF
            PARTICLES;  IF EXCEEDED, PARTICLES ARE REGENERATED)   =     5
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DIFFUSE RECHARGE AND DISCHARGE (FT/SEC)
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00

NODE IDENTIFICATION MAP

     0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
     0    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    0
     0    2    0    0    0    0    0    3    1    4    5    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    0
     0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
```

```
NO. OF NODE IDENT. CODES SPECIFIED =  5

     THE FOLLOWING ASSIGNMENTS HAVE BEEN MADE:
CODE NO.      LEAKANCE      SOURCE CONC.      RECHARGE

   2          1.000E+00      0.000E+00

   1          7.240E-02      2.400E+02

   3          7.240E-02      4.000E+02

   4          7.240E-02      3.500E+02

   5          7.240E-02      2.200E+02
```

```
VERTICAL PERMEABILITY/THICKNESS (FT/(FT*SEC))
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
   1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   7.24E-02  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  7.24E-02  7.24E-02  7.24E-02
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  0.00E+00
   1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      0
       TIME(SECONDS) =  0.00000E+00
       TIME(DAYS)    =  0.00000E+00
       TIME(YEARS)   =  0.00000E+00

    0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
    0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
    0.0000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000
   45.8000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000 45.8000000  0.0000000
    0.0000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000
   45.9000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000 45.9000000  0.0000000
    0.0000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000
   45.3000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000 45.3000000  0.0000000
    0.0000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000
   44.5000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000 44.5000000  0.0000000
    0.0000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000
   43.2000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000 43.2000000  0.0000000
    0.0000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000
   41.8000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000 41.8000000  0.0000000
    0.0000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000
   41.4000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000 41.4000000  0.0000000
    0.0000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000
   40.5000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000 40.5000000  0.0000000
    0.0000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000
   39.4000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000 39.4000000  0.0000000
    0.0000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000
   38.7000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000 38.7000000  0.0000000
    0.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000
   38.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000 38.0000000  0.0000000
    0.0000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000
   36.7000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000 36.7000000  0.0000000
    0.0000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000
   35.7000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000 35.7000000  0.0000000

    0.0000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000
   34.8000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000 34.8000000  0.0000000
    0.0000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000
   33.7000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000 33.7000000  0.0000000
    0.0000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000
   32.8000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000 32.8000000  0.0000000
    0.0000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000
   31.8000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000 31.8000000  0.0000000
    0.0000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000
   30.7000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000 30.7000000  0.0000000
    0.0000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000
   29.7000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000 29.7000000  0.0000000
    0.0000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000
   28.6000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000 28.6000000  0.0000000
    0.0000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000
   27.8000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000 27.8000000  0.0000000
    0.0000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000
   27.3000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000 27.3000000  0.0000000
    0.0000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000
   26.4000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000 26.4000000  0.0000000
    0.0000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000
   25.4000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000 25.4000000  0.0000000
    0.0000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000
   24.8000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000 24.8000000  0.0000000
    0.0000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000
   23.8000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000 23.8000000  0.0000000
```

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  0.0000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000
 22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000   0.0000000
  0.0000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000
 22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000   0.0000000
  0.0000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000
 21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
```

```
ITERATION PARAMETERS
   2.568E-03 6.938E-03 1.875E-02 5.067E-02 1.369E-01 3.700E-01 1.000E+00 0.000E+00 0.000E+00 0.000E+00
   0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
   0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
```

```
CONCENTRATION

NUMBER OF TIME STEPS :       0
       TIME(SECONDS) :  0.00000E+00
  CHEM.TIME(SECONDS) :  0.00000E+00
  CHEM.TIME(DAYS)    :  0.00000E+00
       TIME(YEARS)   :  0.00000E+00
  CHEM.TIME(YEARS)   :  0.00000E+00
 NO. MOVES COMPLETED :       0

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION

NUMBER OF TIME STEPS :      0

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

N :     1
NUMBER OF ITERATIONS :     8


HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :      1
       TIME(SECONDS)  :  1.10000E+08
       TIME(DAYS)     :  1.27315E+03
       TIME(YEARS)    :  3.48568E+00

  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000  46.5999995  46.5999995  46.5999995  46.5999995  46.5999995  46.5999995  46.5999996  46.5999996  46.5999996
 46.5999995  46.5999995  46.5999995  46.5999995  46.5999995  46.5999995  46.5999995   0.0000000
  0.0000000  45.9000000  45.8445756  45.7972553  45.7717024  45.7684295  45.7880729  45.8999972  45.8999981  45.8999981
 45.8999972  45.7880729  45.7684295  45.7717024  45.7972553  45.8445756  45.9000000   0.0000000
  0.0000000  45.2999998  45.0615765  44.9726800  44.9217013  44.9054513  44.9170088  44.9502227  44.9501372  44.9501372
 44.9502227  44.9170088  44.9054513  44.9217013  44.9726800  45.0615765  45.2999992   0.0000000
  0.0000000  44.4999995  44.2086171  44.0889552  44.0374250  44.0171488  44.0153804  44.0259805  44.0312935  44.0312935
 44.0259805  44.0153804  44.0171488  44.0374250  44.0889552  44.2086171  44.4999995   0.0000000
  0.0000000  43.1999999  43.1885137  43.1404476  43.1208803  43.1083187  43.1054888  43.1068457  43.1083248  43.1083248
 43.1068457  43.1054888  43.1083187  43.1208803  43.1404478  43.1885137  43.1999999   0.0000000
  0.0000000  41.8000008  42.1138131  42.1857819  42.1950880  42.1916368  42.1883304  42.1870425  42.1869025  42.1869025
 42.1870425  42.1883304  42.1916368  42.1950880  42.1857819  42.1138131  41.8000008   0.0000000
```

```
  0.0000000  41.3999997  41.3072858  41.2919053  41.2858036  41.2782211  41.2734853  41.2693627  41.2676308  41.2676308
 41.2693627  41.2734853  41.2782211  41.2858036  41.2919053  41.3072858  41.3999997   0.0000000
  0.0000000  40.4999998  40.4195878  40.3907527  40.3745287  40.3626257  40.3540656  40.3483409  40.3457416  40.3457416
 40.3483409  40.3540656  40.3626257  40.3745287  40.3907527  40.4195878  40.4999998   0.0000000
  0.0000000  39.4000003  39.4805292  39.4770462  39.4592662  39.4433873  39.4320356  39.4250567  39.4218564  39.4218564
 39.4250567  39.4320356  39.4433873  39.4592662  39.4770462  39.4805292  39.4000003   0.0000000
  0.0000000  38.7000000  38.6273551  38.5769549  38.5435198  38.5218458  38.5073757  38.4993369  38.4951673  38.4951673
 38.4993369  38.5073757  38.5218458  38.5435198  38.5769545  38.6273551  38.7000000   0.0000000
  0.0000000  37.9999995  37.7525283  37.6598146  37.6187680  37.5927289  37.5776594  37.5696623  37.5652222  37.5652222
 37.5696623  37.5776594  37.5927289  37.6187680  37.6598146  37.7525283  37.9999995   0.0000000
  0.0000000  36.7000002  36.7200352  36.6945260  36.6692089  36.6515504  36.6397893  36.6341108  36.6305586  36.6305586
 36.6341108  36.6397893  36.6515504  36.6692089  36.6945260  36.7200352  36.7000002   0.0000000
  0.0000000  35.7000001  35.7353547  35.7282461  35.7156785  35.7059688  35.6989465  35.6961734  35.6938325  35.6938325
 35.6961734  35.6989465  35.7059688  35.7156785  35.7282461  35.7353547  35.7000001   0.0000000

  0.0000000  34.8999997  34.7939430  34.7672924  34.7599809  34.7576359  34.7560099  34.7566080  34.7558286  34.7558286
 34.7566080  34.7560099  34.7576359  34.7599809  34.7672924  34.7939430  34.8999997   0.0000000
  0.0000000  33.7000002  33.7700734  33.7885963  33.7974199  33.8047244  33.8101115  33.8153077  33.8168540  33.8168540
 33.8153077  33.8101115  33.8047244  33.7974199  33.7885963  33.7700734  33.7000002   0.0000000
  0.0000000  32.7999999  32.8005773  32.8185315  32.8384031  32.8556047  32.8680094  32.8774115  32.8810700  32.8810700
 32.8774115  32.8680094  32.8556047  32.8384031  32.8185315  32.8005773  32.7999999   0.0000000
  0.0000000  31.7999999  31.8126674  31.8471982  31.8814719  31.9094885  31.9294376  31.9433223  31.9482562  31.9482562
 31.9433223  31.9294376  31.9094885  31.8814719  31.8471982  31.8126674  31.7999999   0.0000000
  0.0000000  30.7000001  30.8027926  30.8763269  30.9308183  30.9706708  30.9979538  31.0159084  31.0238820  31.0238820
 31.0159084  30.9979538  30.9706708  30.9308183  30.8763269  30.8027926  30.7000001   0.0000000
  0.0000000  29.7000000  29.8236001  29.9239824  29.9958264  30.0452669  30.0777441  30.0881634  30.1073854  30.1073854
 30.0881634  30.0777441  30.0452669  29.9958264  29.9239824  29.8236001  29.7000000   0.0000000
  0.0000000  28.6000004  28.8657208  29.0011310  29.0820102  29.1345804  29.1687921  29.1900052  29.1997477  29.1997477
 29.1900052  29.1687921  29.1345804  29.0820102  29.0011310  28.8657208  28.6000004   0.0000000
  0.0000000  27.9000001  28.0394664  28.1322787  28.1874214  28.2432803  28.2742429  28.2934951  28.3024992  28.3024992
 28.2934951  28.2742429  28.2432803  28.1874214  28.1322787  28.0394664  27.9000001   0.0000000
  0.0000000  27.2999998  27.2599781  27.2910645  27.3322207  27.3668847  27.3816909  27.4071107  27.4143950  27.4143950
 27.4071107  27.3816909  27.3668847  27.3322207  27.2910645  27.2599781  27.2999998   0.0000000
  0.0000000  26.3999999  26.4086414  26.4400918  26.4730414  26.4996622  26.5179890  26.5285826  26.5333563  26.5333563
 26.5285826  26.5179890  26.4996622  26.4730414  26.4400918  26.4086414  26.3999999   0.0000000
  0.0000000  25.4000003  25.5336930  25.5879394  25.6196733  25.6400666  25.6513231  25.6557100  25.6567990  25.6567990
 25.6557100  25.6513231  25.6400666  25.6196733  25.5879394  25.5336930  25.4000003   0.0000000
  0.0000000  24.7999997  24.7411008  24.7569831  24.7795942  24.7924767  24.7936542  24.7876076  24.7822371  24.7822371
 24.7876076  24.7936542  24.7924767  24.7795942  24.7569831  24.7411008  24.7999997   0.0000000
  0.0000000  23.8000000  23.8712487  23.9205428  23.9475172  23.9539222  23.9415013  23.9171376  23.9015601  23.9015601
 23.9171376  23.9415013  23.9539222  23.9475172  23.9205428  23.8712487  23.8000000   0.0000000
  0.0000000  22.8000004  23.0233699  23 1066367  23.1359182  23.1337260  23.1016465  23.0369527  23.0054345  23.0054345
 23.0369527  23.1016465  23.1337260  23.1359182  23.1066367  23.0233699  22.8000004   0.0000000
  0.0000000  22.2999999  22.3175833  22.3450162  22.3574584  22.3472789  22.2943202  22.1282447  22.0778147  22.0778147
 22.1282447  22.2943202  22.3472789  22.3574584  22.3450162  22.3175833  22.2999999   0.0000000
  0.0000000  21.6000004  21.6000004  21.6000004  21.6000004  21.6000004  21.6000004  21.6000003  21.6000003  21.6000003
 21.6000003  21.6000004  21.6000004  21.6000004  21.6000004  21.6000004  21.6000004   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :       1
       TIME(SECONDS) :   1.10000E+08
       TIME(DAYS)    :   1.27316E+03
       TIME(YEARS)   :   3.48568E+00

  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
  0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
  0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
  0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
  0  43  43  43  43  43  43  43  43  42  43  43  43  43  43  43  43   0
  0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
  0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
  0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
  0  39  39  38  39  39  39  38  39  39  39  39  39  39  39  39  39   0
  0  38  39  39  39  39  39  38  38  38  38  39  38  39  39  39  39   0
  0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
  0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
  0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
  0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  36   0
  0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
  0  33  33  33  33  33  33  33  33  32  33  33  33  33  33  33  33   0
  0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
  0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
  0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
  0  29  29  29  29  29  28  29  29  29  28  29  29  29  29  29  29   0
  0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
  0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
  0  26  26  26  26  26  27  27  27  27  27  27  26  26  26  26  26   0
  0  25  26  26  26  26  26  26  26  [illegible]  26  26  26  26  26  26  25   0
  0  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25   0
  0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
  0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0

  0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
  0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0


DRAWDOWN
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
AQUIFER THICKNESS
    0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  24.9  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  25.0   0.0
    0.0  25.0  24.8  24.7  24.6  24.6  24.6  24.7  24.7  24.7  24.7  24.6  24.6  24.6  24.7  24.8  25.0   0.0
    0.0  25.0  24.7  24.6  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.6  24.7  25.0   0.0
    0.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0   0.0
    0.0  25.0  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.0   0.0
    0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
    0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.9  24.9  24.9  24.9  24.9  25.0   0.0
    0.0  25.0  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.0   0.0
    0.0  25.0  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  25.0   0.0
    0.0  25.0  24.8  24.7  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.7  24.8  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
    0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
    0.0  25.0  25.1  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.1  25.0   0.0
    0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
    0.0  25.0  25.3  25.4  25.5  25.5  25.6  25.6  25.6  25.6  25.6  25.6  25.5  25.5  25.4  25.3  25.0   0.0
    0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
    0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
    0.0  25.0  24.9  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  25.0   0.0
    0.0  25.0  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.0   0.0
    0.0  25.0  25.2  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.2  25.0   0.0
    0.0  25.0  25.0  25.0  25.1  25.0  25.0  24.8  24.8  24.8  24.8  25.0  25.0  25.1  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
CUMULATIVE MASS BALANCE -- (IN FT**3)

 RECHARGE                          :   0.00000E+00
 INJECTION                         :   0.00000E+00
 PUMPAGE                           :   3.18560E+07
 CUMULATIVE  NET  PUMPAGE          :   3.18560E+07
WATER RELEASE FROM STORAGE         :  -1.48403E+03
 LEAKAGE INTO AQUIFER              :  -3.70514E+08
 LEAKAGE OUT OF AQUIFER            :   3.37880E+08
 CUMULATIVE  NET  LEAKAGE          :  -3.26339E+07

      MASS BALANCE RESIDUAL        :   7.76448E+05
      ERROR  (AS PERCENT)          :   2.09780E-01

RATE MASS BALANCE -- (IN C.F.S.)

 RECHARGE                          :   0.00000E+00
 LEAKAGE INTO AQUIFER              :   3.36831E+00
 LEAKAGE OUT OF AQUIFER            :  -3.07164E+00
 NET LEAKAGE     (QNET)            :   2.96649E-01
 INJECTION                         :   0.00000E+00
 PUMPAGE                           :   2.88600E-01
 NET WITHDRAWAL    (TPUM)          :   2.88600E-01
```

```
CONCENTRATION

NUMBER OF TIME STEPS :       1
       DELTA T       :   1.10000E+08
       TIME(SECONDS) :   1.10000E+08
  CHEM.TIME(SECONDS) :   1.10000E+08
  CHEM.TIME(DAYS)    :   1.27314E+03
       TIME(YEARS)   :   3.48569E+00
  CHEM.TIME(YEARS)   :   3.48568E+00
 NO. MOVES COMPLETED :      28

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0003    0.0233    5.1023    2.1293    3.0208
    4.0801    0.0186    0.0003    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0001    0.0047    0.5126   87.8050   39.2352   55.4901
   70.4807    0.4106    0.0037    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0004    0.0291    2.4650  127.9512   56.3122   78.4719
  102.9751    1.9783    0.0233    0.0003    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0013    0.0755    3.9687  118.2212   56.9264   78.0089
   95.7738    3.1954    0.0807    0.0010    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0001    0.0034    0.1641    6.0785  120.4716   59.0506   79.3959
   98.0008    4.9059    0.1322    0.0027    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0001    0.0074    0.2837    7.7491  110.7240   58.6300   77.9038
   90.7228    6.2762    0.2289    0.0059    0.0001    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0003    0.0119    0.4022    9.5159  118.5116   61.0515   78.3259
   97.4440    7.7222    0.3280    0.0088    0.0002    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0005    0.0177    0.5183   10.3348  105.4207   60.0001   75.9363
   87.1162    8.4104    0.4198    0.0143    0.0004    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0006    0.0222    0.6123   11.2804  105.5285   59.6852   74.5013
   87.5132    9.1786    0.4980    0.0180    0.0005    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0006    0.0183    0.5934   10.2329   86.4058   51.1294   63.1210
   71.9006    8.3511    0.4809    0.0148    0.0005    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0003    0.0093    0.4118    7.4950   73.3874   41.3824   52.2727
   60.7460    6.1085    0.3338    0.0075    0.0002    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0001    0.0041    0.1867    3.1843   23.6286   13.9171   17.1055
   19.6837    2.5978    0.1512    0.0033    0.0001    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0014    0.0519    0.9341    5.9826    3.7616    4.5328
    5.0133    0.7617    0.0420    0.0012    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0003    0.0096    0.1809    1.6131    0.9682    1.2012
    1.3404    0.1478    0.0078    0.0002    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0001    0.0016    0.0295    0.2728    0.1596    0.1885
    0.2263    0.0240    0.0013    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0002    0.0043    0.0352    0.0209    0.0257
    0.0292    0.0035    0.0002    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0005    0.0042    0.0025    0.0030
    0.0035    0.0004    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0001    0.0004    0.0002    0.0003
    0.0004    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
 0.0000  -0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000  -0.0000   0.0000
 0.0000  -0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000  -0.0000   0.0000
 0.0000  -0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000  -0.0000   0.0000
 0.0000  -0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000  -0.0000   0.0000
 0.0000  -0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000  -0.0000   0.0000
 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000
 0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000   0.0000

CONCENTRATION

NUMBER OF TIME STEPS =      1

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    5    2    3    4    0    0    0    0    0    0    0
    0    0    0    0    0    0    1   88   39   86   70    0    0    0    0    0    0    0
    0    0    0    0    0    0    2  128   56   79  103    2    0    0    0    0    0    0
    0    0    0    0    0    0    4  118   57   78   98    3    0    0    0    0    0    0
    0    0    0    0    0    0    6  120   59   79   98    5    0    0    0    0    0    0
    0    0    0    0    0    0    8  111   60   78   91    6    0    0    0    0    0    0
    0    0    0    0    0    0   10  119   61   78   97    6    0    0    0    0    0    0
    0    0    0    0    0    1   10  105   60   76   87    6    0    0    0    0    0    0
    0    0    0    0    0    1   11  106   60   75   88    9    0    0    0    0    0    0
    0    0    0    0    0    1   10   88   61   83   72    8    0    0    0    0    0    0
    0    0    0    0    0    0    7   73   41   52   61    8    0    0    0    0    0    0
    0    0    0    0    0    0    3   24   14   17   20    3    0    0    0    0    0    0
    0    0    0    0    0    0    1    6    4    5    5    1    0    0    0    0    0    0
    0    0    0    0    0    0    0    2    1    1    1    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
CHEMICAL MASS BALANCE

        MASS IN BOUNDARIES         =   6.29878E+09
        MASS OUT BOUNDARIES        =  -3.73727E+00
        MASS PUMPED IN             =   0.00000E+00
        MASS PUMPED OUT            =  -7.44394E-11
        INFLOW MINUS OUTFLOW       =   6.29878E+09
        INITIAL MASS STORED        =   0.00000E+00
        PRESENT MASS STORED        =   5.33282E+09
        CHANGE MASS STORED         =   5.33282E+09
    COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION:
        MASS BALANCE RESIDUAL      =   9.65961E+08
        ERROR  (AS PERCENT)        =   1.53088E+01
```

```
N :      3
NUMBER OF ITERATIONS :       1


HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :       3
        TIME(SECONDS) :  3.15576E+08
        TIME(DAYS)    :  3.65250E+03
        TIME(YEARS)   :  1.00000E+01

   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000  46.5999996  46.5999996  46.5999995  46.5999995  46.5999995  46.5999995  46.5999996  46.5999996  46.5999991
  46.5999996  46.5999995  46.5999995  46.5999995  46.5999995  46.5999991  46.5999996   0.0000000
   0.0000000  45.9000000  45.8453388  45.8000053  45.7750384  45.7718877  45.7885159  45.8999873  45.8999981  45.8999981
  45.8999873  45.7885159  45.7718876  45.7750384  45.8000053  45.8453388  45.9000000   0.0000000
   0.0000000  45.2999998  45.0820702  44.9730398  44.9221181  44.9060947  44.9174838  44.9502820  44.9803242  44.9803242
  44.9502820  44.9174838  44.9060947  44.9221181  44.9730398  45.0820702  45.2999998   0.0000000
   0.0000000  44.4999995  44.2053739  44.0825562  44.0281810  44.0072202  44.0063255  44.0159892  44.0214844  44.0214844
  44.0159892  44.0063255  44.0072202  44.0281810  44.0825562  44.2053739  44.4999995   0.0000000
   0.0000000  43.1999999  43.1591830  43.1284562  43.1062184  43.0935293  43.0895020  43.0810276  43.0828715  43.0828715
  43.0810276  43.0895020  43.0935293  43.1062184  43.1284562  43.1591830  43.1999999   0.0000000
   0.0000000  41.8000008  42.1115811  42.1816302  42.1903285  42.1856936  42.1831907  42.1818146  42.1814954  42.1814954
  42.1818146  42.1831907  42.1856936  42.1903285  42.1816303  42.1115811  41.8000008   0.0000000
   0.0000000  41.3999997  41.3078181  41.2931044  41.2866667  41.2801854  41.2745150  41.2707534  41.2690543  41.2690543
  41.2707534  41.2745150  41.2801854  41.2866667  41.2931044  41.3078182  41.3999997   0.0000000
   0.0000000  40.4999998  40.4192707  40.3903798  40.3741889  40.3623198  40.3537562  40.3481420  40.3464871  40.3464871
  40.3481420  40.3537562  40.3623198  40.3741889  40.3903798  40.4192707  40.4999998   0.0000000
   0.0000000  39.4000003  39.4811447  39.4777841  39.4602505  39.4444003  39.4328998  39.4255368  39.4220222  39.4220222
  39.4255368  39.4328998  39.4444003  39.4602505  39.4777841  39.4811447  39.4000003   0.0000000
   0.0000000  38.7000000  38.6262943  38.5780257  38.5442459  38.5217223  38.5070379  38.4981286  38.4938297  38.4938297
  38.4981286  38.5070379  38.5217223  38.5442459  38.5780257  38.6262943  38.7000000   0.0000000
   0.0000000  37.8999995  37.7494775  37.6543212  37.6087423  37.5826316  37.5666666  37.5572888  37.5529486  37.5529486
  37.5572888  37.5666666  37.5826316  37.6087423  37.6543212  37.7494775  37.8999995   0.0000000
   0.0000000  36.7000002  36.7147408  36.6845604  36.6557219  36.6351909  36.6218784  36.6139575  36.6102889  36.6102889
  36.6139575  36.6218784  36.6351909  36.6557219  36.6845604  36.7147408  36.7000002   0.0000000
   0.0000000  35.7000001  35.7308415  35.7189276  35.7022051  35.6888820  35.6798388  35.6743482  35.6718172  35.6718172
  35.6743482  35.6798388  35.6888820  35.7022051  35.7189276  35.7308415  35.7000001   0.0000000
   0.0000000  34.8999997  34.7877551  34.7557880  34.7432268  34.7384810  34.7325252  34.7302653  34.7293204  34.7293204
  34.7302653  34.7325252  34.7384810  34.7432268  34.7557880  34.7877551  34.8999997   0.0000000
   0.0000000  33.7000002  33.7636804  33.7760213  33.7798917  33.7825900  33.7852862  33.7872650  33.7883681  33.7883681
  33.7872650  33.7852862  33.7825900  33.7798917  33.7760213  33.7636804  33.7000002   0.0000000
   0.0000000  32.7999998  32.7942465  32.8082505  32.8206827  32.8332810  32.8429360  32.8482887  32.8525094  32.8525094
  32.8482887  32.8429360  32.8332810  32.8206827  32.8082505  32.7942465  32.7999998   0.0000000
   0.0000000  31.7999999  31.8058456  31.8341573  31.8630883  31.8867303  31.9040289  31.9151147  31.9205821  31.9205821
  31.9151147  31.9040289  31.8867303  31.8630883  31.8341573  31.8058456  31.7999999   0.0000000
   0.0000000  30.7000001  30.7866954  30.8645351  30.9144101  30.9505483  30.9755288  30.9910851  30.9986183  30.9986183
  30.9910851  30.9755288  30.9505483  30.9144101  30.8645351  30.7866954  30.7000001   0.0000000
   0.0000000  29.7000000  29.8189996  29.9153452  29.9835854  30.0301978  30.0610638  30.0788790  30.0868512  30.0868512
  30.0788790  30.0610638  30.0301978  29.9835854  29.9153452  29.8189996  29.7000000   0.0000000
   0.0000000  28.8000004  28.8850720  28.9990855  29.0786489  29.1300081  29.1634285  29.1836546  29.1932423  29.1932423
  29.1836546  29.1634285  29.1300081  29.0786489  28.9990855  28.8850720  28.8000004   0.0000000
   0.0000000  27.9000001  28.0420838  28.1362883  28.2020779  28.2481142  28.2781888  28.2882120  28.3072785  28.3072785
  28.2882120  28.2781888  28.2481142  28.2020780  28.1362884  28.0420838  27.9000001   0.0000000
   0.0000000  27.2999998  27.2822814  27.2852027  27.3375587  27.3730822  27.3885838  27.4144784  27.4220849  27.4220849
  27.4144784  27.3885838  27.3730822  27.3375587  27.2852028  27.2822814  27.2999998   0.0000000
```

```
 0.0000000  26.3999999  26.4084140  26.4419088  26.4759707  26.5037188  26.5230761  26.5345237  26.5397478  26.5397478
26.5345237  26.5230761  26.5037188  26.4759707  26.4419088  26.4084141  26.3999999   0.0000000
 0.0000000  25.4000003  25.5351689  25.5904752  25.6237547  25.6455430  25.6581542  25.6635201  25.6651366  25.6651366
25.6635201  25.6581542  25.6455430  25.6237547  25.5904752  25.5351689  25.4000003   0.0000000
 0.0000000  24.7999997  24.7414232  24.7582031  24.7816395  24.7956947  24.7983665  24.7937563  24.7892672  24.7892672
24.7937563  24.7983665  24.7956947  24.7816395  24.7582031  24.7414232  24.7999997   0.0000000
 0.0000000  23.8000000  23.8704796  23.9187536  23.9473879  23.9548797  23.9440725  23.9212887  23.9065271  23.9065271
23.9212887  23.9440725  23.9548797  23.9473879  23.9187536  23.8704796  23.8000000   0.0000000
 0.0000000  22.8000004  23.0244117  23.1083685  23:1389584  23.1382108  23.1074010  23.0444029  23.0132896  23.0132896
23.0444029  23.1074010  23.1382108  23.1389584  23.1083686  23.0244117  22.8000004   0.0000000
 0.0000000  22.2999999  22.3190015  22.3477363  22.3607419  22.3609579  22.2985512  22.1323626  22.0821108  22.0821108
22.1323626  22.2985512  22.3609579  22.3607419  22.3477364  22.3190015  22.2999999   0.0000000
 0.0000000  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000003  21.8000003  21.8000003
21.8000003  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000


HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :        3
       TIME(SECONDS) :   3.15576E+08
       TIME(DAYS)    :   3.65250E+03
       TIME(YEARS)   :   1.00000E+01

   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
   0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
   0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
   0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
   0  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43   0
   0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
   0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
   0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
   0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
   0  38  39  39  38  39  39  38  38  38  38  38  39  39  39  39  39   0
   0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
   0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
   0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
   0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35   0
   0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
   0  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33   0
   0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
   0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
   0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
   0  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29   0
   0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
   0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
   0  26  26  26  26  27  27  27  27  27  27  27  27  26  26  26  26   0
   0  25  26  26  26  26  26  26  26  26  26  26  26  26  26  26  25   0
   0  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25   0
   0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
   0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0
   0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
   0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
DRAWDOWN
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
AQUIFER THICKNESS
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.8  24.9  24.8  25.0  25.0  25.0  25.0  24.8  24.8  24.9  24.8  24.8  25.0   0.0
   0.0  25.0  24.8  24.7  24.6  24.6  24.6  24.7  24.7  24.7  24.7  24.6  24.6  24.6  24.7  24.8  25.0   0.0
   0.0  25.0  24.7  24.6  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.5  24.6  24.7  25.0   0.0
   0.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0   0.0
   0.0  25.0  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  25.0   0.0
   0.0  25.0  24.7  24.7  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.7  24.7  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.3  25.4  25.5  25.5  25.6  25.6  25.6  25.6  25.6  25.6  25.5  25.5  25.4  25.3  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  24.9  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.2  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.2  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.0  24.8  24.8  24.8  24.8  25.0  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 CUMULATIVE MASS BALANCE -- (IN FT**3)

  RECHARGE                      :  0.00000E+00
  INJECTION                     :  0.00000E+00
  PUMPAGE                       :  9.11383E+07
  CUMULATIVE  NET  PUMPAGE      :  9.11383E+07
  WATER RELEASE FROM STORAGE    : -1.22983E+03
  LEAKAGE INTO AQUIFER          : -1.05980E+09
  LEAKAGE OUT OF AQUIFER        :  9.88498E+08
  CUMULATIVE  NET  LEAKAGE      : -9.21021E+07

      MASS BALANCE RESIDUAL     :  7.10144E+05
      ERROR  (AS PERCENT)       :  8.89783E-02

 RATE MASS BALANCE -- (IN C.F.S.)

  RECHARGE                      :  0.00000E+00
  LEAKAGE INTO AQUIFER          :  3.35802E+00
  LEAKAGE OUT OF AQUIFER        : -3.08858E+00
  NET LEAKAGE     (QNET)        :  2.69415E-01
  INJECTION                     :  0.00000E+00
  PUMPAGE                       :  2.88800E-01
  NET WITHDRAWAL    (TPUM)      :  2.88800E-01
```

```
CONCENTRATION

NUMBER OF TIME STEPS :      3
        DELTA T      :  9.86760E+07
        TIME(SECONDS) :  3.15576E+08
   CHEM.TIME(SECONDS) :  3.15574E+08
   CHEM.TIME(DAYS)    :  3.65247E+03
        TIME(YEARS)   :  1.00000E+01
   CHEM.TIME(YEARS)   :  9.99993E+00
 NO. MOVES COMPLETED :     26

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0004     0.0225     4.9818     2.1841     3.1014

     3.8771     0.0181     0.0003     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0035     0.4505    85.2553    43.7691    62.9750

    89.1828     0.3610     0.0028     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0004     0.0281     2.8812   127.5345    55.9124    75.8304

   102.7308     2.1823     0.0234     0.0003     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0011     0.0882     3.8248   117.2404    55.3894    75.1780

    84.9184     3.1882     0.0546     0.0008     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0001     0.0038     0.1588     5.3824   118.9507    57.8544    78.0000

    95.8069     5.1838     0.1275     0.0028     0.0000     0.0000     0.0000     0.0000
```

```
  0.0000    0.0000    0.0000    0.0001    0.0058    0.2389    7.3537  112.7079   58.2719   75.7540
 92.1858    5.9519    0.1927    0.0047    0.0001    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0003    0.0128    0.4268    8.5299  110.0888   60.0584   77.2322
 90.8859    7.7391    0.3451    0.0103    0.0002    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0005    0.0183    0.5359   10.5242  108.5875   60.7201   75.7180
 90.5977    8.5880    0.4360    0.0148    0.0004    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0007    0.0249    0.6739   11.9069  105.0951   61.8878   75.5241
 87.3322    9.7128    0.5483    0.0201    0.0005    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0008    0.0287    0.7424   12.4158  109.5322   60.8510   80.5536
 91.1480   10.1469    0.8029    0.0233    0.0006    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0008    0.0248    0.7855   12.9254  108.7815   61.5617   79.5471
 89.0035   10.5573    0.6366    0.0202    0.0007    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0011    0.0283    0.8148   12.3188   83.3873   64.3484   65.0809
 70.5590   10.1188    0.8572    0.0241    0.0009    0.0000    0.0000    0.0000

  0.0000    0.0000    0.0000    0.0014    0.0337    0.8715   13.0677  102.4804   62.1524   75.6077
 85.5192   10.7406    0.7181    0.0281    0.0012    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0001    0.0022    0.0447    0.9854   13.5952  100.7144   62.7971   75.5202
 84.2217   11.2390    0.8212    0.0376    0.0019    0.0001    0.0000    0.0000
  0.0000    0.0000    0.0002    0.0045    0.0826    1.2697   14.7048   99.4518   63.5333   75.9898
 83.3770   12.2913    1.0673    0.0701    0.0038    0.0002    0.0000    0.0000
  0.0000    0.0000    0.0010    0.0080    0.1328    1.7447   17.0280   95.1389   65.2177   76.1476
 80.3857   14.3229    1.4897    0.1115    0.0087    0.0007    0.0000    0.0000
  0.0000    0.0000    0.0005    0.0111    0.1869    2.2974   19.6719   93.4318   66.8327   75.7876
 79.7479   16.4534    1.9073    0.1544    0.0091    0.0004    0.0000    0.0000
  0.0000    0.0001    0.0022    0.0154    0.2299    2.6408   20.9732   89.1660   68.1343   76.3060
 78.6807   17.5073    2.1620    0.1866    0.0128    0.0018    0.0001    0.0000
  0.0000    0.0001    0.0011    0.0186    0.2681    2.9458   22.1685   90.5721   68.6386   76.0563
 78.1478   18.5366    2.4302    0.2197    0.0152    0.0009    0.0001    0.0000
  0.0000    0.0001    0.0018    0.0230    0.3037    3.2132   22.8528   87.4737   69.4924   76.4985
 75.7867   19.1287    2.8532    0.2490    0.0168    0.0015    0.0001    0.0000
  0.0000    0.0001    0.0075    0.0370    0.3515    3.4954   23.8962   89.0612   70.4075   75.9918
 77.3480   20.0338    2.8898    0.2885    0.0303    0.0081    0.0002    0.0000
  0.0000    0.0003    0.0141    0.1868    0.4858    3.7913   27.1241   85.7543   70.8820   76.9789
 74.8157   22.7533    3.1386    0.3990    0.1371    0.0116    0.0003    0.0000
  0.0000    0.0004    0.0147    0.1533    1.3002    4.7559   22.4227   84.9707   70.6935   76.1573
 74.3348   18.9253    3.9352    1.0799    0.1262    0.0120    0.0004    0.0000
  0.0000    0.0005    0.0141    0.1535    1.3488    5.8910   25.1543   81.7870   69.8432   74.6128
 71.7573   21.2386    4.7110    1.1204    0.1285    0.0115    0.0004    0.0000
  0.0000    0.0004    0.0123    0.1483    1.3055    5.8543   24.8882   79.1294   66.0223   72.4586
 69.5393   21.0371    4.8505    1.0841    0.1206    0.0101    0.0003    0.0000
  0.0000    0.0005    0.0127    0.1330    1.1702    5.6155   23.4926   72.9421   62.9497   66.1862
 64.3705   19.6825    4.6570    0.9717    0.1097    0.0104    0.0004    0.0000
  0.0000    0.0012    0.0123    0.1163    0.9602    4.7488   18.2105   63.6242   56.6568   60.6778
 56.7639   15.4852    3.9410    0.7875    0.0959    0.0101    0.0010    0.0000
  0.0000    0.0007    0.0110    0.0904    0.6706    2.6030   16.2267   48.4519   42.9868   44.9862
 42.0788   13.7286    2.3265    0.5586    0.0744    0.0090    0.0006    0.0000
  0.0000    0.0006    0.0060    0.0571    0.1691    1.3422    5.7007   29.2221   29.6812   31.7113
 24.9722    5.6436    1.1126    0.1398    0.0488    0.0048    0.0005    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION

NUMBER OF TIME STEPS :      3

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    5    2    3    4    0    0    0    0    0    0    0
    0    0    0    0    0    0    0   55   44   63   59    0    0    0    0    0    0    0
    0    0    0    0    0    0    3  128   58   79  103    2    0    0    0    0    0    0
    0    0    0    0    0    0    4  117   55   76   95    3    0    0    0    0    0    0
    0    0    0    0    0    0    6  115   58   76   87    5    0    0    0    0    0    0
    0    0    0    0    0    0    7  113   64   77   82    6    0    0    0    0    0    0
    0    0    0    0    0    0   10  110   60   77   91    8    0    0    0    0    0    0
    0    0    0    0    0    1   11  110   61   77   91    9    0    0    0    0    0    0
    0    0    0    0    0    1   12  105   62   77   87   10    1    0    0    0    0    0
    0    0    0    0    0    1   12  110   61   81   91   10    1    0    0    0    0    0
    0    0    0    0    0    1   13  107   62   80   88   11    1    0    0    0    0    0
    0    0    0    0    0    1   12   83   64   65   71   10    1    0    0    0    0    0
    0    0    0    0    0    1   13  102   62   77   86   11    1    0    0    0    0    0
    0    0    0    0    0    1   14  101   63   76   84   11    1    0    0    0    0    0
    0    0    0    0    0    1   15   99   64   76   83   12    1    0    0    0    0    0
    0    0    0    0    0    2   17   95   65   76   80   14    1    0    0    0    0    0
    0    0    0    0    0    2   20   93   67   76   80   16    2    0    0    0    0    0
    0    0    0    0    0    3   21   89   68   76   77   18    2    0    0    0    0    0
    0    0    0    0    0    3   22   91   69   76   78   19    2    0    0    0    0    0
    0    0    0    0    0    3   23   87   69   76   78   19    3    0    0    0    0    0
    0    0    0    0    0    3   24   89   70   77   77   20    3    0    0    0    0    0
    0    0    0    0    0    4   27   88   71   77   75   23    3    0    0    0    0    0
    0    0    0    0    1    5   22   85   71   76   74   19    4    1    0    0    0    0
    0    0    0    0    1    6   25   82   70   75   72   21    5    1    0    0    0    0
    0    0    0    0    1    8   25   79   66   72   70   21    5    1    0    0    0    0
    0    0    0    0    1    8   23   73   63   68   64   20    5    1    0    0    0    0
    0    0    0    0    1    5   18   64   57   61   57   16    4    1    0    0    0    0
    0    0    0    0    1    3   16   48   43   45   42   14    2    1    0    0    0    0
    0    0    0    0    0    1    7   29   30   32   28    6    1    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

CHEMICAL MASS BALANCE

       MASS IN BOUNDARIES      :  1.77149E+10
       MASS OUT BOUNDARIES     : -1.88938E+08
       MASS PUMPED IN          :  0.00000E+00
       MASS PUMPED OUT         : -2.37135E+08
       INFLOW MINUS OUTFLOW    :  1.73078E+10
       INITIAL MASS STORED     :  0.00000E+00
       PRESENT MASS STORED     :  1.47088E+10
       CHANGE MASS STORED      :  1.47088E+10
     COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION:
       MASS BALANCE RESIDUAL   :  2.59902E+09
       ERROR  (AS PERCENT)     :  1.46713E+01
```

```
BABYLON,LEVELS,CHLORIDE                                              0000000

    TIME VERSUS HEAD AND CONCENTRATION AT SELECTED OBSERVATION POINTS
            PUMPING PERIOD NO.     1


             TRANSIENT  SOLUTION


                OBS.WELL NO.      X    Y               N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                     1            8    4


                                                       0        46.3           0.0           0.000
                                                       1        45.0         128.0           3.486
                                                       2        45.0         134.4           6.971
                                                       3        45.0         127.5          10.000
                OBS.WELL NO.      X    Y               N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                     2           10   18


                                                       0        33.7           0.0           0.000
                                                       1        33.8           0.2           3.486
                                                       2        33.8          77.5           6.971
                                                       3        33.8          76.0          10.000
                OBS.WELL NO.      X    Y               N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                     3           10   26


                                                       0        24.8           0.0           0.000
                                                       1        24.8           0.0           3.486
                                                       2        24.8           0.2           6.971
                                                       3        24.8          72.5          10.000
MESSAGE SUMMARY: MESSAGE NUMBER - COUNT
                            206     511  OR OVER
```

APPENDIX V-B

INPUT AND SELECTED OUTPUT FOR TEST PROBLEM 2

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.LONGIS22.CNTL

//A11834E JOB (?????,TSO-TR-KONI),KONIKOWRUN,
//   TIME=(5,0),CLASS=K,   TYPRUN=HOLD,
//   MSGCLASS=X,NOTIFY=*
/*PASSWORD ????
/*JOBPARM ROOM=C,FORMS=9001
//*
//KONI EXEC PGM=KONI60G,REGION=1500K
//STEPLIB  DD DISP=SHR,DSN=U11236C.KONI.LOAD
//FT06F001 DD DSN=U11834C.LONGIS22.OUTLIST,UNIT=STORAGE,
//            SPACE=(TRK,(50,50)),DISP=(MOD,CATLG),
//            DCB=(RECFM=VBA,LRECL=133,BLKSIZE=7448)
//FT10F001 DD DSN=U11834C.LONGIS22.GRAPH,UNIT=STORAGE,
//            SPACE=(TRK,(50,50)),DISP=(MOD,CATLG),
//            DCB=(RECFM=FB,LRECL=80,BLKSIZE=7440)
//FT07F001 DD SYSOUT=B
//FT05F001 DD *
BABYLON,LEVELB,CHLORIDE
   3    1   18   313620    1    7    3 100    8    4    1    0    0    0    1    0          0000000
   10   .01   .25    40.0005    1.1.1E8  500  500    .2    .5     1
    0    0         0.         0.         0.         0.         0.
   0    0    1    0    0
 8 4
1016
1026
 8 3 -0.0724    400.0
 9 3 -0.0724    240.0
10 3 -0.0724    350.0
11 3 -0.0724    320.0
 829    .0724
 929    .0724
1029    .0724
1129    .0724
0     0.1447
0        25.
1        1.0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0     0
  046.646.646.646.646.646.646.646.646.646.646.646.646.646.646.646.6     0
  045.945.945.945.945.945.945.945.945.945.945.945.945.945.945.945.9     0
  045.345.345.345.345.345.345.345.345.345.345.345.345.345.345.345.3     0
  044.544.544.544.544.544.544.544.544.544.544.544.544.544.544.544.5     0
  043.243.243.243.243.243.243.243.243.243.243.243.243.243.243.243.2     0
  041.841.841.841.841.841.841.841.841.841.841.841.841.841.841.841.8     0
  041.441.441.441.441.441.441.441.441.441.441.441.441.441.441.441.4     0
  040.540.540.540.540.540.540.540.540.540.540.540.540.540.540.540.5     0
  039.439.439.439.439.439.439.439.439.439.439.439.439.439.439.439.4     0
  038.738.738.738.738.738.738.738.738.738.738.738.738.738.738.738.7     0
  038.038.038.038.038.038.038.038.038.038.038.038.038.038.038.038.0     0
  036.736.736.736.736.736.736.736.736.736.736.736.736.736.736.736.7     0
  035.735.735.735.735.735.735.735.735.735.735.735.735.735.735.735.7     0
  034.934.934.934.934.934.934.934.934.934.934.934.934.934.934.934.9     0
  033.733.733.733.733.733.733.733.733.733.733.733.733.733.733.733.7     0
  032.832.832.832.832.832.832.832.832.832.832.832.832.832.832.832.8     0
  031.831.831.831.831.831.831.831.831.831.831.831.831.831.831.831.8     0
  030.730.730.730.730.730.730.730.730.730.730.730.730.730.730.730.7     0
  029.729.729.729.729.729.729.729.729.729.729.729.729.729.729.729.7     0
  028.628.628.628.628.628.628.628.628.628.628.628.628.628.628.628.6     0
  027.927.927.927.927.927.927.927.927.927.927.927.927.927.927.927.9     0
  027.327.327.327.327.327.327.327.327.327.327.327.327.327.327.327.3     0
  026.426.426.426.426.426.426.426.426.426.426.426.426.426.426.426.4     0
  025.425.425.425.425.425.425.425.425.425.425.425.425.425.425.425.4     0
  024.824.824.824.824.824.824.824.824.824.824.824.824.824.824.824.8     0
  023.823.823.823.823.823.823.823.823.823.823.823.823.823.823.823.8     0
```

```
    022.822.822.822.822.822.822.822.822.822.822.822.822.822.822.822.8   0
    022.322.322.322.322.322.322.322.322.322.322.322.322.322.322.322.3   0
    021.621.621.621.621.621.621.621.621.621.621.621.621.621.621.621.6   0
    0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
0          0
1         1.
000000000000000000
022222222222222220
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
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020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
022222222222222220
000000000000000000
 2       1.0          0.        0. 0
0       0.0
```

```
U.S.G.S. METHOD-OF-CHARACTERISTICS MODEL FOR SOLUTE TRANSPORT IN GROUND WATER
BABYLON,LEVEL8,CHLORIDE
                                                                          0000000
                              I N P U T    D A T A

                                GRID DESCRIPTORS

                   NX     (NUMBER OF COLUMNS)  :    18
                   NY     (NUMBER OF ROWS)     :    31
                   XDEL   (X-DISTANCE IN FEET) :   500.0
                   YDEL   (Y-DISTANCE IN FEET) :   500.0

                                TIME  PARAMETERS

                   NTIM   (MAX. NO. OF TIME STEPS)          :        3
                   NPMP   (NO. OF PUMPING PERIODS)          :        1
                   PINT   (PUMPING PERIOD IN YEARS)         :      10.000
                   TIMX   (TIME INCREMENT MULTIPLIER)       :       1.00
                   TINIT  (INITIAL TIME STEP IN SEC.)       :   0.11E+08

                   HYDROLOGIC AND CHEMICAL PARAMETERS

                   S        (STORAGE COEFFICIENT)           :      0.000500
                   POROS    (EFFECTIVE POROSITY)            :      0.25
                   BETA     (CHARACTERISTIC LENGTH)         :     40.0
                   DLTRAT   (RATIO OF TRANSVERSE TO
                            LONGITUDINAL DISPERSIVITY)      :      0.20
                   ANFCTR   (RATIO OF T-YY TO T-XX)         :      1.000000
***NON-DECAYING SPECIES***

***NON-SORBING SPECIES***

***ADIP USED***

***UNCONFINED AQUIFER***

                               EXECUTION PARAMETERS

                  NITP    (NO. OF ITERATION PARAMETERS) :     7
                  TOL     (CONVERGENCE CRITERIA - ADIP) :     0.0100
                  ITMAX   (MAX.NO.OF ITERATIONS - ADIP) :   100
                  CELDIS  (MAX.CELL DISTANCE PER MOVE
                               OF PARTICLES - M.O.C.)   :     0.500
                  NPMAX   (MAX. NO. OF PARTICLES)       :  3820
                  NPTPND  (NO. PARTICLES PER NODE)      :      4

                                PROGRAM OPTIONS

                  NPNT    (TIME STEP INTERVAL FOR
                           COMPLETE PRINTOUT)        :     1
                  NPNTMV  (MOVE INTERVAL FOR CHEM.
                           CONCENTRATION PRINTOUT)   :     0
                  NPNTVL  (PRINT OPTION-VELOCITY
                           0=NO; 1=FIRST TIME STEP;
                           2=ALL TIME STEPS)         :     0
                  NPNTD   (PRINT OPTION-DISP.COEF.
                           0=NO; 1=FIRST TIME STEP;
                           2=ALL TIME STEPS)         :     0
                  NUMOBS  (NO. OF OBSERVATION WELLS
                           FOR HYDROGRAPH PRINTOUT)  :     3
                  NREC    (NO. OF PUMPING WELLS)     :     8

                  NCODES  (FOR NODE IDENT.)          :     1
                  NPNCHV  (PUNCH VELOCITIES)         :     0
                  NPDELC  (PRINT OPT.-CONC. CHANGE)  :     1
TIME INTERVALS (IN SECONDS)
   0.11000E+08 0.11000E+08 0.11000E+08 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

             LOCATION OF OBSERVATION WELLS

                  NO.      X     Y

                   1       8     4
                   2      10    16
                   3      10    26

             LOCATION  OF  PUMPING  WELLS

             X    Y    RATE(IN CFS)    CONC.

             8    3    -.724E-01      400.00
             9    3    -.724E-01      340.00
            10    3    -.724E-01      350.00
            11    3    -.724E-01      320.00
             8   28    0.724E-01        0.00
             9   28    0.724E-01        0.00
            10   28    0.724E-01        0.00
            11   28    0.724E-01        0.00

             AREA OF ONE CELL :   2.5000E+05

             X-Y SPACING:
                 500.00
                 500.00
```

```
AQUIFER THICKNESS (FT)
     0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
     0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
WATER TABLE
      0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
      0.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.    0.
      0.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.    0.
      0.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.    0.
      0.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.    0.
      0.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.    0.
      0.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.    0.
      0.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.    0.
      0.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.    0.
      0.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.    0.
      0.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.    0.
      0.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.    0.
      0.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.    0.
      0.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.    0.
      0.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.    0.
      0.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.    0.
      0.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.    0.
      0.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.    0.
      0.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.    0.
      0.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.    0.
      0.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.    0.
      0.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.    0.
      0.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.    0.
      0.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.    0.
      0.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.    0.
      0.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.    0.
      0.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.    0.
      0.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.    0.
      0.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.    0.
      0.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.    0.
      0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
```

```
TRANSMISSIVITY MAP (FT*FT/SEC)
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45L-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01
   1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  1.45E-01  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
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PERMEABILTY MAP (FT/SEC)
  0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
  0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00   0.00E+00   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   0.00E+00
  5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03   5.78E-03
  0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
  0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00




   NO. OF FINITE-DIFFERENCE CELLS IN AQUIFER =  484

   AREA OF AQUIFER IN MODEL  =  1.16000E+08 SQ. FT.


   NICRIT   (MAX. NO. OF CELLS THAT CAN BE VOID OF
             PARTICLES;  IF EXCEEDED, PARTICLES ARE REGENERATED)   =    5
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DIFFUSE RECHARGE AND DISCHARGE (FT/SEC)
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
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  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00


NODE IDENTIFICATION MAP

     0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
     0    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    0    0    0    0    0    0    0    0    0    0    0    0    0    0    2    0
     0    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    2    0
     0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

      NO. OF NODE IDENT. CODES SPECIFIED :  1

          THE FOLLOWING ASSIGNMENTS HAVE BEEN MADE:
    CODE NO.     LEAKANCE     SOURCE CONC.     RECHARGE

       2         1.000E+00     0.000E+00
```

```
VERTICAL PERMEABILITY/THICKNESS (FT/(FT*SEC))
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00 -0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
  0.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00

HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      0
       TIME(SECONDS) =  0.00000E+00
       TIME(DAYS)    =  0.00000E+00
       TIME(YEARS)   =  0.00000E+00

   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000
  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000  46.8000000   0.0000000
   0.0000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000
  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000   0.0000000
   0.0000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000
  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000   0.0000000
   0.0000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000
  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000   0.0000000
   0.0000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000
  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000   0.0000000
   0.0000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000
  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000   0.0000000
   0.0000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000
  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000   0.0000000
   0.0000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000
  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000   0.0000000
```

```
   0.0000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000
  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000   0.0000000
   0.0000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000
  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000   0.0000000
   0.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000
  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000   0.0000000
   0.0000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000
  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000   0.0000000
   0.0000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000
  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000   0.0000000
   0.0000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000
  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000   0.0000000
   0.0000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000
  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000   0.0000000
   0.0000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000
  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000   0.0000000
   0.0000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000
  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000   0.0000000
   0.0000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000
  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000   0.0000000
   0.0000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000
  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000   0.0000000
   0.0000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000
  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000   0.0000000
   0.0000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000
  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000  27.8000000   0.0000000
   0.0000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000
  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000   0.0000000
   0.0000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000
  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000   0.0000000
   0.0000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000
  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000   0.0000000
   0.0000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000
  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000   0.0000000
   0.0000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000
  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000   0.0000000
   0.0000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000
  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000   0.0000000
   0.0000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000
  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000   0.0000000
   0.0000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000
  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000

ITERATION PARAMETERS
    2.568E-03 6.938E-03 1.875E-02 5.067E-02 1.369E-01 3.700E-01 1.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
```

```
CONCENTRATION

NUMBER OF TIME STEPS :      0
       TIME(SECONDS) :  0.00000E+00
  CHEM.TIME(SECONDS) :  0.00000E+00
  CHEM.TIME(DAYS)    :  0.00000E+00
       TIME(YEARS)   :  0.00000E+00
  CHEM.TIME(YEARS)   :  0.00000E+00
 NO. MOVES COMPLETED :      0

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION
NUMBER OF TIME STEPS =     0

   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

N =      1
NUMBER OF ITERATIONS =     6
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      1
       TIME(SECONDS) =  1.10000E+08
       TIME(DAYS)    =  1.27315E+03
       TIME(YEARS)   =  3.48569E+00

  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000  46.5999996  46.5999996  46.5999995  46.5999995  46.5999996  46.5999996  46.5999997  46.5999997  46.5999997
 46.5999997  46.5999996  46.5999995  46.5999995  46.5999996  46.5999996  46.5999995   0.0000000
  0.0000000  45.9000000  45.8477570  45.8042759  45.7843100  45.7812271  45.8430668  46.0088889  46.0593821  46.0593821
 46.0088889  45.8430668  45.7812271  45.7843100  45.8042759  45.8477570  45.9000000   0.0000000
  0.0000000  45.2999996  45.0868388  44.9842576  44.9421051  44.9383616  44.9708013  45.0361936  45.0684205  45.0684205
 45.0361936  44.9708013  44.9383616  44.9421051  44.9842576  45.0868388  45.2999996   0.0000000
  0.0000000  44.4999995  44.2163205  44.1041596  44.0808171  44.0523923  44.0668347  44.0936181  44.1105720  44.1105720
 44.0936181  44.0668347  44.0523923  44.0808171  44.1041596  44.2163205  44.4999995   0.0000000
  0.0000000  43.1999989  43.1738801  43.1552787  43.1443013  43.1425183  43.1497272  43.1612324  43.1694119  43.1694119
 43.1612324  43.1497272  43.1425183  43.1443013  43.1552787  43.1738801  43.1999989   0.0000000
  0.0000000  41.8000008  42.1205805  42.1999802  42.2169456  42.2215134  42.2261425  42.2316919  42.2355115  42.2355115
 42.2316919  42.2261425  42.2215134  42.2169456  42.1999802  42.1205805  41.8000008   0.0000000
  0.0000000  41.3999997  41.3137055  41.3048412  41.3053733  41.3053845  41.3054383  41.3063077  41.3070551  41.3070551
 41.3063077  41.3054383  41.3053845  41.3053733  41.3048412  41.3137055  41.3999997   0.0000000
  0.0000000  40.4999996  40.4253144  40.4021697  40.3915940  40.3850273  40.3809440  40.3789057  40.3780803  40.3780803
 40.3789057  40.3809440  40.3850273  40.3915940  40.4021697  40.4253144  40.4999996   0.0000000
  0.0000000  39.4000003  39.4855328  39.4869644  39.4738654  39.4623036  39.4545953  39.4502415  39.4482981  39.4482981
 39.4502415  39.4545953  39.4623036  39.4738654  39.4869644  39.4855328  39.4000003   0.0000000
  0.0000000  38.7000000  38.6316853  38.5854432  38.5558911  38.5374419  38.5262800  38.5199851  38.5171842  38.5171842
 38.5199851  38.5262800  38.5374419  38.5558911  38.5854432  38.6316853  38.7000000   0.0000000
  0.0000000  37.9999995  37.7562025  37.6670087  37.6271434  37.6058132  37.5934723  37.5885161  37.5834289  37.5834289
 37.5885161  37.5934723  37.6058132  37.6271434  37.6670087  37.7562025  37.9999995   0.0000000
  0.0000000  36.7000002  36.7231413  36.7005787  36.6778575  36.6623272  36.6529884  36.6478243  36.6458072  36.6458072
 36.6478243  36.6529884  36.6623272  36.6778575  36.7005787  36.7231413  36.7000002   0.0000000
  0.0000000  35.7000001  35.7379623  35.7333081  35.7228489  35.7148123  35.7099296  35.7073136  35.7062559  35.7062559
 35.7073136  35.7099296  35.7148123  35.7228489  35.7333081  35.7379623  35.7000001   0.0000000

  0.0000000  34.8999997  34.7961184  34.7715025  34.7659062  34.7648770  34.7651203  34.7656584  34.7660672  34.7660672
 34.7656584  34.7651203  34.7648770  34.7659062  34.7715025  34.7961184  34.8999997   0.0000000
  0.0000000  33.7000002  33.7718777  33.7920805  33.8022982  33.8108474  33.8176296  33.8228852  33.8252743  33.8252743
 33.8228852  33.8176296  33.8108474  33.8022982  33.7920805  33.7718777  33.7000002   0.0000000
  0.0000000  32.7999999  32.8020853  32.8214012  32.8424086  32.8604481  32.8742034  32.8834084  32.8879780  32.8879780
 32.8834084  32.8742034  32.8604481  32.8424086  32.8214012  32.8020853  32.7999999   0.0000000
  0.0000000  31.8000000  31.8138878  31.8495515  31.8847532  31.9134488  31.9345087  31.9482185  31.9549073  31.9549073
 31.9482185  31.9345087  31.9134488  31.8847532  31.8495515  31.8138878  31.8000000   0.0000000
  0.0000000  30.7000001  30.8037874  30.8782455  30.9334879  30.9739107  31.0020855  31.0199174  31.0284895  31.0284895
 31.0199174  31.0020855  30.9739107  30.9334879  30.8782455  30.8037874  30.7000001   0.0000000
  0.0000000  29.7000000  29.8244061  29.9255388  29.9980075  30.0479159  30.0810901  30.1014551  30.1111073  30.1111073
 30.1014551  30.0810901  30.0479159  29.9980075  29.9255388  29.8244061  29.7000000   0.0000000
  0.0000000  28.8000004  28.9663893  29.0023880  29.0837783  29.1367433  29.1714837  29.1927065  29.2027720  29.2027720
 29.1927065  29.1714837  29.1367433  29.0837783  29.0023880  28.9663893  28.8000004   0.0000000
  0.0000000  27.9000001  28.0399840  28.1332833  28.1988488  28.2450408  28.2763910  28.2957118  28.3048282  28.3048282
 28.2957118  28.2763910  28.2450408  28.1988488  28.1332833  28.0399840  27.9000001   0.0000000
  0.0000000  27.2999998  27.2603871  27.2918613  27.3333605  27.3663087  27.3933887  27.4089184  27.4163294  27.4163294
 27.4089184  27.3933887  27.3663087  27.3333605  27.2918613  27.2603871  27.2999998   0.0000000
  0.0000000  26.3999999  26.4069805  26.4407158  26.4739429  26.5008019  26.5193135  26.5300437  26.5348764  26.5348764
 26.5300437  26.5193135  26.5008019  26.4739429  26.4407158  26.4069805  26.3999999   0.0000000
  0.0000000  25.4000003  25.5339374  25.5884192  25.6203734  25.6409628  25.6523372  25.6568692  25.6578750  25.6578750
 25.6568692  25.6523372  25.6409628  25.6203734  25.5884192  25.5339374  25.4000003   0.0000000
 0.0000000  24.7888887  24.7412825  24.7573413  24.7801218  24.7831800  24.7844082  24.7884881  24.7831182  24.7831182
24.7884881  24.7844082  24.7831800  24.7801218  24.7573413  24.7412825  24.7888887   0.0000000
 0.0000000  23.8000000  23.8713771  23.8207888  23.8478845  23.8544180  23.8420340  23.8177884  23.8021883  23.8021883
23.8177884  23.8420340  23.8544180  23.8478845  23.8207888  23.8713771  23.8000000   0.0000000
 0.0000000  22.8000004  23.0234518  23.1087892  23.1381812  23.1340485  23.1019883  23.0373781  23.0058377  23.0058377
23.0373781  23.1019883  23.1340485  23.1381812  23.1087892  23.0234518  22.8000004   0.0000000
 0.0000000  22.2888888  22.3176232  22.3480884  22.3575774  22.3474388  22.2844888  22.1284537  22.0780117  22.0780117
22.1284537  22.2844888  22.3474388  22.3575774  22.3480884  22.3176232  22.2888888   0.0000000
 0.0000000  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000003  21.8000003  21.8000003
21.8000003  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004   0.0000000
 0.0000000 - 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      1
       TIME(SECONDS) =  1.10000E+08
       TIME(DAYS)    =  1.27315E+03
       TIME(YEARS)   =  3.48588E+00

   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   0 47 47 47 47 47 47 47 47 47 47 47 47 47 47 47 47  0
   0 46 46 46 46 46 46 46 46 46 46 46 46 46 46 46 46  0
   0 45 45 45 45 45 45 45 45 45 45 45 45 45 45 45 45  0
   0 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44 44  0
   0 43 43 43 43 43 43 43 43 43 43 43 43 43 43 43 43  0
   0 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42  0
   0 41 41 41 41 41 41 41 41 41 41 41 41 41 41 41 41  0
   0 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40 40  0
   0 39 39 39 39 39 39 39 39 39 39 39 39 39 39 39 39  0
   0 39 39 39 39 39 39 39 39 39 39 39 39 39 39 39 39  0
   0 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38 38  0
   0 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37 37  0
   0 36 36 36 36 36 36 36 36 36 36 36 36 36 36 36 36  0
   0 35 35 35 35 35 35 35 35 35 35 35 35 35 35 35 35  0
   0 34 34 34 34 34 34 34 34 34 34 34 34 34 34 34 34  0
   0 33 33 33 33 33 33 33 32 33 33 33 33 33 33 33 32  0
   0 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32  0
   0 31 31 31 31 31 31 31 31 31 31 31 31 31 31 31 31  0
   0 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30  0
   0 29 29 29 29 29 29 29 29 29 29 29 29 29 29 29 29  0
   0 28 28 28 28 28 28 28 28 28 28 28 28 28 28 28 28  0
   0 27 27 27 27 27 27 27 27 27 27 27 27 27 27 27 27  0
   0 26 26 26 26 27 27 27 27 27 27 27 27 26 26 26 26  0
   0 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26 26  0
   0 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25  0
   0 24 24 24 24 24 24 24 24 24 24 24 24 24 24 24 24  0
   0 23 23 23 23 23 23 23 23 23 23 23 23 23 23 23 23  0

   0 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22  0
   0 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22 22  0
   0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
```

```
DRAWDOWN
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
        0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
AQUIFER THICKNESS
       0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  25.1  25.2  25.2  25.1  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  24.8  24.7  24.6  24.6  24.7  24.7  24.8  24.8  24.7  24.7  24.6  24.6  24.7  24.8  25.0   0.0
       0.0  25.0  24.7  24.6  24.5  24.5  24.6  24.6  24.6  24.6  24.6  24.6  24.5  24.6  24.6  24.7  25.0   0.0
       0.0  25.0  25.0  25.0  24.9  24.9  24.9  25.0  25.0  25.0  25.0  24.9  24.9  24.9  25.0  25.0  25.0   0.0
       0.0  25.0  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  24.8  24.7  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.7  24.8  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.2  25.2  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
       0.0  25.0  25.1  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.1  25.0   0.0
       0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
       0.0  25.0  25.3  25.4  25.5  25.5  25.6  25.6  25.6  25.6  25.6  25.6  25.5  25.5  25.4  25.3  25.0   0.0
       0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
       0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
       0.0  25.0  24.9  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  25.0   0.0
       0.0  25.0  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.0   0.0
       0.0  25.0  25.2  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.2  25.0   0.0
       0.0  25.0  25.0  25.0  25.1  25.0  25.0  24.8  24.8  24.8  24.8  25.0  25.0  25.1  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0:00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

  CUMULATIVE MASS BALANCE -- (IN FT**3)


   RECHARGE                     :  0.00000E+00
   INJECTION                    : -3.18560E+07
   PUMPAGE                      :  3.18560E+07
   CUMULATIVE  NET  PUMPAGE     :  0.00000E+00
   WATER RELEASE FROM STORAGE   : -2.08448E+03
   LEAKAGE INTO AQUIFER         : -3.38714E+08
   LEAKAGE OUT OF AQUIFER       :  3.38755E+08
   CUMULATIVE  NET  LEAKAGE     :  4.04480E+04

       MASS BALANCE RESIDUAL    : -4.24980E+04
       ERROR  (AS PERCENT)      : -1.14671E-02


  RATE MASS BALANCE -- (IN C.F.S.)


   RECHARGE                     :  0.00000E+00
   LEAKAGE INTO AQUIFER         :  3.07922E+00
   LEAKAGE OUT OF AQUIFER       : -3.07959E+00
   NET LEAKAGE      (QNET)      : -3.68013E-04
   INJECTION                    : -2.89600E-01
   PUMPAGE                      :  2.89600E-01
   NET WITHDRAWAL     (TPUM)    :  0.00000E+00



 CONCENTRATION

 NUMBER OF TIME STEPS :        1
         DELTA T      :   1.10000E+08
         TIME(SECONDS) :  1.10000E+08
   CHEM.TIME(SECONDS) :   1.10000E+08
   CHEM.TIME(DAYS)    :   1.27314E+03
         TIME(YEARS)  :   3.48806E+00
   CHEM.TIME(YEARS)   :   3.48806E+00
  NO. MOVES COMPLETED :      28

     0.0000      0.0000      0.0000      0.0000      0.0000      0.0000      0.0000      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0000      0.0000      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0000      0.0000     -0.0001      0.0888     11.6478      7.8048     11.2240

     9.2852      0.0720     -0.0001      0.0000      0.0000      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0000      0.0002      0.0095      3.0896    182.4552    129.0205    184.8978

   154.8857      2.4887      0.0078      0.0002      0.0000      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0001      0.0084      0.5870     40.3986    185.7570    124.7450    176.1830

   150.2036     32.5556      0.4586      0.0052      0.0001      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0005      0.0302      1.8201     84.8731    181.0548    118.8284    159.8013

   147.5259     88.5867      1.4896      0.0244      0.0004      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0011      0.0853      2.7778     76.8842    170.9780    123.4220    187.8880

   140.3856     81.2510      2.2441      0.0527      0.0009      0.0000      0.0000      0.0000

     0.0000      0.0000      0.0000      0.0024      0.1188      4.4036     84.7881    180.8272    129.2911    172.8862

   149.2718     88.5184      3.5572      0.0980      0.0019      0.0000      0.0000      0.0000
   0.0000    0.0000    0.0001    0.0044    0.1758    4.8872   81.3483  188.8709  132.3023  189.8483
 141.5119   85.9208    3.9587    0.1420    0.0035    0.0001    0.0000    0.0000
   0.0000    0.0000    0.0001    0.0056    0.2525    6.3820   78.9231  187.3347  126.2730  182.8505
 140.2189   83.9442    5.1889    0.2039    0.0055    0.0001    0.0000    0.0000
   0.0000    0.0000    0.0002    0.0083    0.2774    6.1288   78.6397  180.7486  108.4520  138.0172
 126.8059   83.7277.   4.9519    0.2240    0.0087    0.0001    0.0000    0.0000
   0.0000    0.0000    0.0001    0.0077    0.2581    5.7066   59.9826  126.4946  106.1434  134.6080
 106.8883   46.8385    4.8133    0.2083    0.0062    0.0001    0.0000    0.0000
   0.0000    0.0000    0.0001    0.0032    0.1218    3.3885   41.1087   92.0348   89.7884   88.3283
  77.7827   33.3748    2.7385    0.0984    0.0026    0.0001    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0009    0.0482    1.2606   14.0100   28.8559   29.8523   37.7511
  24.8782   11.3919    1.0120    0.0390    0.0008    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0002    0.0115    0.2788    3.2342   10.6213    9.1239   11.8186
   8.8829    2.8277    0.2243    0.0083    0.0002    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0019    0.0475    0.6457    2.5535    2.0271    2.5519
   2.1888    0.5272    0.0365    0.0015    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0003    0.0073    0.1018    0.4431    0.3671    0.4603
   0.3776    0.0831    0.0059    0.0002    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0010    0.0132    0.0859    0.0580    0.0706
   0.0582    0.0108    0.0006    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0001    0.0015    0.0081    0.0068    0.0085
   0.0059    0.0012    0.0001    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0001    0.0008    0.0007    0.0008
   0.0007    0.0001    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0001    0.0001    0.0001
   0.0001    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000
   0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000
   0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000
   0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000
   0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
   0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION
NUMBER OF TIME STEPS =      1

     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0    12     8    11     9     0     0     0     0     0     0     0
     0     0     0     0     0     0     3   192   128   185   155     2     0     0     0     0     0     0
     0     0     0     0     0     1    40   188   125   178   150    33     0     0     0     0     0     0
     0     0     0     0     0     2    85   181   118   180   148    69     1     0     0     0     0     0
     0     0     0     0     0     3    78   171   123   188   140    61     2     0     0     0     0     0
     0     0     0     0     0     4    85   181   129   173   149    59     4     0     0     0     0     0
     0     0     0     0     0     5    81   170   122   180   142    65     4     0     0     0     0     0
     0     0     0     0     0     6    79   167   126   163   140    64     5     0     0     0     0     0
     0     0     0     0     0     6    79   151   108   138   127    64     5     0     0     0     0     0
     0     0     0     0     0     6    80   128   105   135   107    49     5     0     0     0     0     0
     0     0     0     0     0     3    41    92    70    88    78    33     3     0     0     0     0     0
     0     0     0     0     0     1    14    29    30    38    28    11     1     0     0     0     0     0
     0     0     0     0     0     0     3    11     9    12     9     3     0     0     0     0     0     0
     0     0     0     0     0     0     1     3     2     3     2     1     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0

     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
N =     3
NUMBER OF ITERATIONS =      1


HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =       3
       TIME(SECONDS) =  3.15578E+08
       TIME(DAYS)    =  3.65250E+03
       TIME(YEARS)   =  1.00000E+01

   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000  46.5999998  46.5999996  46.5999995  46.5999995  46.5999995  46.5999996  46.5999997  46.5999997  46.5999997
  46.5999997  46.5999996  46.5999995  46.5999995  46.5999995  46.5999996  46.5999998   0.0000000
   0.0000000  45.9000000  45.8490547  45.8062385  45.7888302  45.7941012  45.8458835  46.0120817  46.0621988  46.0621988
  46.0120817  45.8458835  45.7941012  45.7888302  45.8062385  45.8490547  45.9000000   0.0000000
   0.0000000  45.2999999  45.0888845  44.9838812  44.9411887  44.9384823  44.9706880  45.0388716  45.0898300  45.0898300
  45.0388716  44.9706880  44.9384823  44.9411887  44.9838812  45.0888845  45.2999999   0.0000000
   0.0000000  44.4999995  44.2114520  44.0958040  44.0500302  44.0407804  44.0554477  44.0830768  44.1008448  44.1008448
  44.0830768  44.0554477  44.0407804  44.0500302  44.0958040  44.2114520  44.4999995   0.0000000
   0.0000000  43.1999999  43.1858818  43.1420253  43.1278273  43.1247851  43.1318171  43.1438453  43.1524297  43.1524297
  43.1438453  43.1318171  43.1247851  43.1278273  43.1420253  43.1858818  43.1999999   0.0000000
   0.0000000  41.8000008  42.1178188  42.1948885  42.2103988  42.2144271  42.2187800  42.2242883  42.2280794  42.2280794
  42.2242883  42.2187800  42.2144271  42.2103988  42.1948885  42.1178188  41.8000008   0.0000000
  0.0000000  41.3999997  41.3136080  41.3048052  41.3048525  41.3041180  41.3041435  41.3051933  41.3081373  41.3081373
 41.3051933  41.3041435  41.3041180  41.3048525  41.3048052  41.3136080  41.3999997   0.0000000
  0.0000000  40.4999998  40.4243827  40.4008364  40.3895257  40.3825873  40.3783233  40.3781836  40.3753592  40.3753592
 40.3781836  40.3783233  40.3825873  40.3895257  40.4008364  40.4243827  40.4999998   0.0000000
  0.0000000  39.4000003  39.4855805  39.4865741  39.4733147  39.4614070  39.4532548  39.4484721  39.4483141  39.4483141
 39.4484721  39.4532548  39.4614070  39.4733147  39.4865741  39.4855805  39.4000003   0.0000000
  0.0000000  38.7000000  38.6320895  38.5855054  38.5552457  38.5358084  38.5238902  38.5189485  38.5138025  38.5138025
 38.5189485  38.5238902  38.5358084  38.5552457  38.5855054  38.6320895  38.7000000   0.0000000
  0.0000000  37.9999995  37.7528544  37.6608011  37.6178324  37.5944079  37.5805747  37.5727549  37.5682402  37.5682402
 37.5727549  37.5805747  37.5944079  37.6178324  37.6608011  37.7528544  37.9999995   0.0000000
  0.0000000  36.7000002  36.7174053  36.6898081  36.6633693  36.6449455  36.6333565  36.6266866  36.6238647  36.6238647
 36.6266866  36.6333565  36.6449455  36.6633693  36.6898081  36.7174053  36.7000002   0.0000000
  0.0000000  35.7000001  35.7328854  35.7232971  35.7088852  35.6988579  35.6893089  35.6848488  35.6828280  35.6828280
 35.6848488  35.6893089  35.6988579  35.7088852  35.7232971  35.7328854  35.7000001   0.0000000
  0.0000000  34.8999997  34.7899021  34.7593909  34.7484853  34.7431881  34.7403277  34.7389293  34.7383852  34.7383852
 34.7389293  34.7403277  34.7431881  34.7484853  34.7593909  34.7899021  34.8999997   0.0000000
  0.0000000  33.7000002  33.7652133  33.7790234  33.7840392  33.7881005  33.7917197  33.7944121  33.7958310  33.7958310
 33.7944121  33.7917197  33.7881005  33.7840392  33.7790234  33.7652133  33.7000002   0.0000000
  0.0000000  32.7999998  32.7955152  32.8087326  32.8242723  32.8378255  32.8482227  32.8551807  32.8586549  32.8586549
 32.8551807  32.8482227  32.8378255  32.8242723  32.8087326  32.7955152  32.7999998   0.0000000
  0.0000000  31.7999999  31.8088941  31.8362058  31.8680488  31.8904713  31.9083753  31.9199679  31.9258384  31.9258384
 31.9199679  31.9083753  31.8904713  31.8680488  31.8362058  31.8088942  31.7999999   0.0000000
  0.0000000  30.7000001  30.7975611  30.8662235  30.9188449  30.9536239  30.9790989  30.9950855  31.0027753  31.0027753
 30.9950855  30.9790989  30.9536240  30.9188449  30.8662235  30.7975611  30.7000001   0.0000000
  0.0000000  29.7000000  29.8197127  29.9167339  29.9855853  30.0327199  30.0639930  30.0831541  30.0922646  30.0922646
 30.0831541  30.0639930  30.0327199  29.9855853  29.9167339  29.8197127  29.7000000   0.0000000
  0.0000000  28.8000004  28.9558574  29.0002042  29.0802851  29.1320729  29.1658268  29.1883385  29.1980398  29.1980398
 29.1883385  29.1658268  29.1320729  29.0802851  29.0002042  28.9558575  28.8000004   0.0000000
  0.0000000  27.9000001  28.0425409  28.1372178  28.2034136  28.2497957  28.2811227  28.3003997  28.3095636  28.3095636
 28.3003997  28.2811227  28.2497957  28.2034136  28.1372178  28.0425409  27.9000001   0.0000000
  0.0000000  27.2999998  27.2626361  27.2959530  27.3368396  27.3744411  27.4001789  27.4162456  27.4239052  27.4239052
 27.4162456  27.4001789  27.3744411  27.3368396  27.2959530  27.2626361  27.2999998   0.0000000
  0.0000000  26.3999999  26.4097213  26.4425085  26.4758339  26.5048028  26.5243443  26.5359396  26.5412295  26.5412295
 26.5359396  26.5243443  26.5048028  26.4758339  26.4425085  26.4097213  26.3999999   0.0000000
  0.0000000  25.4000003  25.5354104  25.5909465  25.6244332  25.6484962  25.6591503  25.6646343  25.6663034  25.6663034
 25.6646343  25.6591503  25.6484962  25.6244332  25.5909466  25.5354104  25.4000003   0.0000000
  0.0000000  24.7999997  24.7416075  24.7585529  24.7821576  24.7963460  24.7991474  24.7948080  24.7901595  24.7901595
 24.7948080  24.7991474  24.7963460  24.7821576  24.7585529  24.7416075  24.7999997   0.0000000
  0.0000000  23.8000000  23.8706130  23.9200142  23.9477632  23.9554516  23.9448241  23.9218850  23.9071753  23.9071753
 23.9218850  23.9448241  23.9554516  23.9477632  23.9200143  23.8706130  23.8000000   0.0000000
  0.0000000  22.8000004  23.0244991  23.1085391  23.1392020  23.1385197  23.1077624  23.0448087  23.0137154  23.0137154
 23.0448087  23.1077624  23.1385197  23.1392020  23.1085391  23.0244991  22.8000004   0.0000000
  0.0000000  22.2999999  22.3190450  22.3478213  22.3608843  22.3511120  22.2987316  22.1325856  22.0823241  22.0823241
 22.1325856  22.2987316  22.3511120  22.3608843  22.3478213  22.3190450  22.2999999   0.0000000
  0.0000000  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000003  21.8000003  21.8000003
 21.8000003  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      3
         TIME(SECONDS) =   3.15578E+08
         TIME(DAYS)    =   3.65250E+03
         TIME(YEARS)   =   1.00000E+01

    0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
    0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
    0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
    0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
    0  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43   0
    0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
    0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
    0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
    0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
    0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
    0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
    0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
    0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
    0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35   0
    0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
    0  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33   0
    0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
    0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
    0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
    0  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29   0
    0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
    0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
    0  26  26  26  26  27  27  27  27  27  27  27  27  26  26  26  26   0
    0  25  26  26  26  26  26  26  26  26  26  26  26  26  26  26  25   0
    0  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25   0
    0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
    0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0
    0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
    0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
    0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

DRAWDOWN
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
      0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
```

```
AQUIFER THICKNESS
    0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
    0.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0  0.0
    0.0 25.0 24.9 24.9 24.9 24.9 24.9 25.1 25.2 25.2 25.2 25.1 24.9 24.9 24.9 24.9 24.9 25.0  0.0
    0.0 25.0 24.8 24.7 24.6 24.6 24.7 24.7 24.8 24.8 24.8 24.7 24.7 24.6 24.6 24.7 24.8 25.0  0.0
    0.0 25.0 24.7 24.6 24.5 24.5 24.6 24.6 24.6 24.6 24.5 24.5 24.6 24.5 24.6 24.6 24.7 25.0  0.0
    0.0 25.0 25.0 24.9 24.9 24.9 24.9 24.9 25.0 25.0 25.0 24.9 24.9 24.9 24.9 24.9 25.0 25.0  0.0
    0.0 25.0 25.3 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.3 25.0  0.0
    0.0 25.0 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 25.0  0.0
    0.0 25.0 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 25.0  0.0
    0.0 25.0 25.1 25.1 25.1 25.1 25.1 25.0 25.0 25.0 25.0 25.0 25.1 25.1 25.1 25.1 25.1 25.0  0.0
    0.0 25.0 24.8 24.9 24.9 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.9 24.9 24.9 25.0  0.0
    0.0 25.0 24.8 24.7 24.6 24.6 24.6 24.6 24.6 24.6 24.6 24.6 24.6 24.6 24.6 24.7 24.8 25.0  0.0
    0.0 25.0 25.0 25.0 25.0 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 24.9 25.0 25.0 25.0 25.0  0.0
    0.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0  0.0
    0.0 25.0 24.9 24.9 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.8 24.9 24.9 25.0  0.0
    0.0 25.0 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.0  0.0
    0.0 25.0 25.0 25.0 25.0 25.0 25.0 25.1 25.1 25.1 25.1 25.1 25.0 25.0 25.0 25.0 25.0 25.0  0.0
    0.0 25.0 25.0 25.0 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.0 25.0 25.0  0.0
    0.0 25.0 25.1 25.2 25.2 25.3 25.3 25.3 25.3 25.3 25.3 25.3 25.3 25.3 25.2 25.2 25.1 25.0  0.0
    0.0 25.0 25.1 25.2 25.3 25.3 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.3 25.3 25.2 25.1 25.0  0.0
    0.0 25.0 25.3 25.4 25.5 25.5 25.6 25.6 25.6 25.6 25.6 25.6 25.6 25.5 25.5 25.4 25.3 25.0  0.0
    0.0 25.0 25.1 25.2 25.3 25.3 25.4 25.4 25.4 25.4 25.4 25.4 25.4 25.3 25.3 25.2 25.1 25.0  0.0
    0.0 25.0 25.0 25.0 25.0 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.0 25.0 25.0 25.0  0.0
    0.0 25.0 25.0 25.0 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.0 25.0 25.0  0.0
    0.0 25.0 25.1 25.2 25.2 25.2 25.3 25.3 25.3 25.3 25.3 25.3 25.3 25.2 25.2 25.2 25.1 25.0  0.0
    0.0 25.0 24.8 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 24.8 25.0  0.0
    0.0 25.0 25.1 25.1 25.1 25.2 25.1 25.1 25.1 25.1 25.1 25.1 25.1 25.2 25.1 25.1 25.1 25.0  0.0
    0.0 25.0 25.2 25.3 25.3 25.3 25.3 25.2 25.2 25.2 25.2 25.2 25.3 25.3 25.3 25.3 25.2 25.0  0.0
    0.0 25.0 25.0 25.0 25.1 25.1 25.0 24.8 24.8 24.8 24.8 24.8 25.0 25.1 25.1 25.0 25.0 25.0  0.0
    0.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0 25.0  0.0
    0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
```

```
TRANSMISSIVITY
    0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.17 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

  CUMULATIVE MASS BALANCE -- (IN FT**3)

   RECHARGE                       :  0.00000E+00
   INJECTION                      : -9.13908E+07
   PUMPAGE                        :  9.13908E+07
   CUMULATIVE  NET  PUMPAGE       :  0.00000E+00
   WATER RELEASE FROM STORAGE     : -1.80028E+03
   LEAKAGE INTO AQUIFER           : -9.70743E+08
   LEAKAGE OUT OF AQUIFER         :  9.70797E+08
   CUMULATIVE  NET  LEAKAGE       :  5.42720E+04

        MASS BALANCE RESIDUAL     : -5.60840E+04
        ERROR  (AS PERCENT)       : -5.27830E-03

  RATE MASS BALANCE -- (IN C.F.S.)

   RECHARGE                       :  0.00000E+00
   LEAKAGE INTO AQUIFER           :  3.07355E+00
   LEAKAGE OUT OF AQUIFER         : -3.07368E+00
   NET LEAKAGE     (QNET)         : -1.52408E-04
   INJECTION                      : -2.88800E-01
   PUMPAGE                        :  2.88800E-01
   NET WITHDRAWAL    (TPUM)       :  0.00000E+00
```

```
CONCENTRATION

NUMBER OF TIME STEPS =      3
       DELTA T         =  9.55780E+07
       TIME(SECONDS)   =  3.15576E+08
  CHEM.TIME(SECONDS)   =  3.15574E+08
  CHEM.TIME(DAYS)      =  3.65247E+03
       TIME(YEARS)     =  1.00000E+01
  CHEM.TIME(YEARS)     =  9.99992E+00
 NO. MOVES COMPLETED   =     25

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000   -0.0000   -0.0017   -0.1524   12.1573    6.4231    9.3333
    5.8369   -0.1217   -0.0014   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000   -0.0000   -0.0073   -0.4888  209.9339  111.3810  162.2828
  157.7689   -0.3880   -0.0058   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0888    3.0285  157.8257   86.3702  140.3870
  134.0275    2.4182   -0.0534    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0003   -0.0833   32.2262  190.8475   98.9273  143.7978
  152.8435   25.7811   -0.0659    0.0003    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0021    0.0027   86.1835  194.3383  116.4587  167.7821
  155.8622   52.9814    0.0071    0.0012    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000    0.0002    0.0098    0.3854   74.5705  186.6483  114.5786  163.9897
  149.3847   59.7428    0.3182    0.0082    0.0002    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0017    0.0845    2.6812   81.8037  175.4837  116.9822  180.2518
  145.3528   55.9089    2.1782    0.0556    0.0014    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0002    0.0072    0.2352    5.5209   82.4809  174.2215  126.3331  184.1307
  146.2707   66.5525    4.9892    0.2011    0.0083    0.0001    0.0000    0.0000
    0.0000    0.0000    0.0003    0.0131    0.3835    7.6580   85.4540  174.8007  130.2509  185.3577
  146.9458   68.4415    6.1837    0.3084    0.0105    0.0003    0.0000    0.0000
    0.0000    0.0000    0.0005    0.0176    0.4876    8.4872   85.7287  189.9980  131.8189  185.3813
  144.6580   70.1776    6.8531    0.3789    0.0141    0.0004    0.0000    0.0000
    0.0000    0.0000    0.0006    0.0210    0.5377    9.2661   84.1869  188.1939  130.5128  183.8138
  141.8881   67.8334    7.4332    0.4311    0.0168    0.0005    0.0000    0.0000
    0.0000    0.0000    0.0006    0.0222    0.5826    9.6081   85.8512  186.9870  130.2249  183.1841
  140.9865   69.2728    7.7107    0.4505    0.0178    0.0005    0.0000    0.0000

    0.0000    0.0000    0.0006    0.0213    0.5415    9.7376   84.8591  186.5558  134.5226  186.8537
  146.9472   68.4527    7.8097    0.4327    0.0171    0.0006    0.0000    0.0000
    0.0000    0.0000    0.0008    0.0214    0.5128    9.8024   83.3038  186.4080  128.6700  180.8448
  141.2568   67.1682    7.6268    0.4112    0.0172    0.0005    0.0000    0.0000
    0.0000    0.0000    0.0008    0.0242    0.5341    9.0276   75.4910  162.3280  125.7182  164.8436
  136.4109   61.0226    7.2694    0.4294    0.0195    0.0006    0.0000    0.0000
    0.0000    0.0000    0.0012    0.0285    0.6652    8.5858   72.1024  180.4471  128.3680  185.3024
  138.9444   58.4535    6.9305    0.4586    0.0240    0.0010    0.0000    0.0000
    0.0000    0.0001    0.0026    0.0417    0.6843    8.3281   52.9376  156.2486  133.9227  189.2330
  137.8406   61.6137    6.7876    0.5401    0.0340    0.0021    0.0001    0.0000
    0.0000    0.0001    0.0025    0.0848    0.8288    9.8453   83.3810  186.5784  134.9181  186.1306
  136.3391   52.1864    8.0368    0.7586    0.0531    0.0030    0.0001    0.0000
    0.0000    0.0002    0.0053    0.0987    1.3495   12.7107   72.1008  156.4730  137.4006  158.8669
  137.6963   59.4932   10.4009    1.1058    0.0787    0.0052    0.0001    0.0000
    0.0000    0.0008    0.0100    0.1344    1.7885   15.4498   79.5883  155.6271  139.0441  158.0304
  137.5284   65.7128   12.8851    1.4520    0.1107    0.0083    0.0007    0.0000
    0.0000    0.0014    0.0297    0.1853    2.1841   17.4110   82.5080  152.6040  138.8732  156.8522
  135.4970   68.3653   14.2753    1.7718    0.1519    0.0242    0.0009    0.0000
    0.0000    0.0028    0.0398    0.2412    2.5385   18.8112   82.8829  146.5428  137.6537  153.7636
  132.2970   66.8700   15.4137    2.0724    0.1867    0.0322    0.0021    0.0000
    0.0000    0.0038    0.0550    0.3685    2.8223   19.7178   82.8847  145.0148  137.2201  151.8889
  128.8102   68.5119   16.1619    2.3001    0.3002    0.0447    0.0029    0.0000
```

```
     0.0000     0.0045     0.1284     0.6985     3.8758    20.3536    60.5125   141.9559   134.3226   148.8110
   127.9969    67.3309    16.6771     2.9170     0.5861     0.1051     0.0037     0.0000
     0.0000     0.0043     0.1615     1.2102     5.3663    24.3049    81.0280   135.5645   129.2598   141.5886
   123.0576    66.7616    19.8744     4.3839     0.9871     0.1313     0.0034     0.0000
     0.0000     0.0049     0.1176     1.0791     6.4978    26.1045    72.9645   124.3830   123.5742   130.3087
   112.3057    62.1389    21.3722     5.3426     0.8616     0.0858     0.0040     0.0000
     0.0000     0.0052     0.0941     0.8088     5.0131    21.0898    59.9218   104.3337   102.4342   110.2844
    93.4387    51.0858    17.4730     4.1345     0.5830     0.0767     0.0043     0.0000
     0.0000     0.0050     0.0709     0.5529     3.4323    14.4840    43.5800    69.3384    85.9354    75.4846
    80.9577    36.2184    11.8004     2.8006     0.4501     0.0576     0.0041     0.0000
     0.0000     0.0039     0.0352     0.2878     1.5635     6.6866    20.9236    54.2615    53.2747    61.0316
    47.4863    16.9326     5.3381     1.2762     0.2182     0.0284     0.0023     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000



CONCENTRATION
NUMBER OF TIME STEPS =      3

   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0  12   8   9  10   0   0   0   0   0   0   0
   0   0   0   0   0   0   0 210 111 182 188   0   0   0   0   0   0   0
   0   0   0   0   0   0   3 168  86 140 134   2   0   0   0   0   0   0
   0   0   0   0   0   0  32 181  89 144 153  26   0   0   0   0   0   0
   0   0   0   0   0   0  65 194 118 188 157  53   0   0   0   0   0   0
   0   0   0   0   0   0  75 187 115 184 149  60   0   0   0   0   0   0
   0   0   0   0   0   3  82 179 117 180 145  65   2   0   0   0   0   0
   0   0   0   0   0   6  82 174 128 184 146  57   5   0   0   0   0   0
   0   0   0   0   0   8  85 175 130 185 147  66   6   0   0   0   0   0
   0   0   0   0   0   8  88 170 132 185 145  70   7   0   0   0   0   0
   0   0   0   0   1   9  84 168 131 184 142  68   7   0   0   0   0   0
   0   0   0   0   1  10  86 167 130 183 141  69   8   0   0   0   0   0
   0   0   0   0   1  10  85 169 125 167 145  68   8   0   0   0   0   0
   0   0   0   0   1  10  83 166 130 181 141  67   8   0   0   0   0   0
   0   0   0   0   1   9  75 162 126 155 136  61   7   0   0   0   0   0
   0   0   0   0   1   9  72 160 128 155 137  58   7   0   0   0   0   0
   0   0   0   0   1   8  63 158 134 159 138  52   7   1   0   0   0   0
   0   0   0   0   1  10  63 157 135 156 136  52   8   1   0   0   0   0
   0   0   0   0   1  13  72 156 137 159 138  58  10   1   0   0   0   0
   0   0   0   0   2  15  80 156 139 159 138  66  13   1   0   0   0   0
   0   0   0   0   2  17  83 153 139 157 135  66  14   2   0   0   0   0
   0   0   0   0   3  19  82 149 138 154 132  69  15   2   0   0   0   0
   0   0   0   0   3  20  83 145 137 152 130  69  16   2   0   0   0   0
   0   0   0   1   4  20  81 142 134 149 128  67  17   3   1   0   0   0
   0   0   0   1   5  24  81 136 129 142 123  67  20   4   1   0   0   0
   0   0   0   1   6  28  73 124 124 130 112  62  21   5   1   0   0   0
   0   0   0   1   5  21  6C 104 102 110  83  61  17   4   1   0   0   0
   0   0   0   1   3  14  44  69  66  75  61  36  12   3   0   0   0   0
   0   0   0   0   2   7  21  54  63  61  47  17   8   1   0   0   0   0
   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
CHEMICAL MASS BALANCE

        MASS IN BOUNDARIES      =  0.00000E+00
        MASS OUT BOUNDARIES     = -3.12291E+08
        MASS PUMPED IN          =  2.99302E+10
        MASS PUMPED OUT         = -3.91414E+08
        INFLOW MINUS OUTFLOW    =  2.92265E+10
        INITIAL MASS STORED     =  0.00000E+00
        PRESENT MASS STORED     =  3.08193E+10
        CHANGE MASS STORED      =  3.08193E+10
      COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION:
        MASS BALANCE RESIDUAL   = -1.59286E+09
        ERROR  (AS PERCENT)     = -5.32192E+00
```

```
BABYLON,LEVEL8,CHLORIDE                                        0000000

     TIME VERSUS HEAD AND CONCENTRATION AT SELECTED OBSERVATION POINTS
             PUMPING PERIOD NO.    1


              TRANSIENT  SOLUTION


                 OBS.WELL NO.     X    Y                 N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                      1           8    4

                                                         (
                                                         0        45.3          0.0           0.000
                                                         1        45.0        185.8           3.486
                                                         2        45.0        201.1           6.971
                                                         3        45.0        167.8          10.000
                 OBS.WELL NO.     X    Y                 N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                      2          10   16

                                                         0        33.7          0.0           0.000
                                                         1        33.8          0.5           3.486
                                                         2        33.8        157.1           6.971
                                                         3        33.8        164.6          10.000
                 OBS.WELL NO.     X    Y                 N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                      3          10   26

                                                         0        24.8          0.0           0.000
                                                         1        24.8          0.0           3.486
                                                         2        24.8          0.6           6.971
                                                         3        24.8        141.6          10.000
  MESSAGE SUMMARY: MESSAGE NUMBER - COUNT
                      208      511  OR OVER
```

APPENDIX V-C

INPUT AND SELECTED OUTPUT FOR TEST PROBLEM 3

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.LONGIS23.CNTL

//U11834C JOB (?????,TSO-TR-KONI),KONIKOWRUN,
//  TIME=(5,00),CLASS=K, TYPRUN=HOLD,
//  MSGCLASS=X,NOTIFY=*
/*PASSWORD ????
/*JOBPARM ROOM=C
//*
//KONI EXEC PGM=KONI60G,REGION=1500K
//STEPLIB  DD DISP=SHR,DSN=U11236C.KONI.LOAD
//FT06F001 DD DSN=U11834C.LONGIS23.OUTLIST,UNIT=STORAGE,
//            SPACE=(TRK,(50,50)),DISP=OLD,
//            DCB=(RECFM=VBA,LRECL=133,BLKSIZE=7448)
//FT10F001 DD DSN=U11834C.LONGIS23.GRAPH,UNIT=STORAGE,
//            SPACE=(TRK,(50,50)),DISP=OLD,
//            DCB=(RECFM=FB,LRECL=80,BLKSIZE=7440)
//FT07F001 DD SYSOUT=B
//FT05F001 DD *
BABYLON,LEVELB,CHLORIDE                                                     00000000
   3   3  18  313620   1   7   3 100   8   4   1   0   0   0   1   0
3.      .01  .25   40.0005   1.3.1E7  500  500   .2   .5    1
   0    0          0.          0.          0.          0.          0.
  0   0   1   0   0
 8 4
1016
1026
 8 3  -.0724    250.
 9 3  -.0724    220.
10 3  -.0724    240.
11 3  -.0724    240.
 829   .0724      0.0
 929   .0724      0.0
1029   .0724      0.0
1129   .0724      0.0
0     0.1447
1        1.0
  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
  0 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25  0
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  0 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25  0
 0 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25  0
 0 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25 25  0
 0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
1      1.0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    0
  046.646.646.646.646.646.646.646.646.646.646.646.646.646.646.646.6    0
  045.945.945.945.945.945.945.945.945.945.945.945.945.945.945.945.9    0
  045.345.345.345.345.345.345.345.345.345.345.345.345.345.345.345.3    0
  044.544.544.544.544.544.544.544.544.544.544.544.544.544.544.544.5    0
  043.243.243.243.243.243.243.243.243.243.243.243.243.243.243.243.2    0
  041.841.841.841.841.841.841.841.841.841.841.841.841.841.841.841.8    0
  041.441.441.441.441.441.441.441.441.441.441.441.441.441.441.441.4    0
  040.540.540.540.540.540.540.540.540.540.540.540.540.540.540.540.5    0
  039.439.439.439.439.439.439.439.439.439.439.439.439.439.439.439.4    0
  038.738.738.738.738.738.738.738.738.738.738.738.738.738.738.738.7    0
  038.038.038.038.038.038.038.038.038.038.038.038.038.038.038.038.0    0
  036.736.736.736.736.736.736.736.736.736.736.736.736.736.736.736.7    0
  035.735.735.735.735.735.735.735.735.735.735.735.735.735.735.735.7    0
  034.934.934.934.934.934.934.934.934.934.934.934.934.934.934.934.9    0
  033.733.733.733.733.733.733.733.733.733.733.733.733.733.733.733.7    0
  032.832.832.832.832.832.832.832.832.832.832.832.832.832.832.832.8    0
  031.831.831.831.831.831.831.831.831.831.831.831.831.831.831.831.8    0
  030.730.730.730.730.730.730.730.730.730.730.730.730.730.730.730.7    0
  029.729.729.729.729.729.729.729.729.729.729.729.729.729.729.729.7    0
  028.628.628.628.628.628.628.628.628.628.628.628.628.628.628.628.6    0
  027.927.927.927.927.927.927.927.927.927.927.927.927.927.927.927.9    0
  027.327.327.327.327.327.327.327.327.327.327.327.327.327.327.327.3    0
  026.426.426.426.426.426.426.426.426.426.426.426.426.426.426.426.4    0
  025.425.425.425.425.425.425.425.425.425.425.425.425.425.425.425.4    0
  024.824.824.824.824.824.824.824.824.824.824.824.824.824.824.824.8    0
  023.823.823.823.823.823.823.823.823.823.823.823.823.823.823.823.8    0
  022.822.822.822.822.822.822.822.822.822.822.822.822.822.822.822.8    0
  022.322.322.322.322.322.322.322.322.322.322.322.322.322.322.322.3    0
  021.621.621.621.621.621.621.621.621.621.621.621.621.621.621.621.6    0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0    0
0    0.0E00
1         1.
000000000000000000
022222222222222220
020000000000000020
020000000000000020
020000000000000020
020000000000000020
020000000000000020
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020000000000000020
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020000000000000020
```

```
022222222222222220
000000000000000000
 2       1.0        0.         0. 0
0       0.0
1
   1   1   7 100   8   0   0   0   1   0    4   1.1.2E8
 8 3     0.0     0.0
 9 3     0.0     0.0
10 3     0.0     0.0
11 3     0.0     0.0
 829     0.0     0.0
 929     0.0     0.0
1029     0.0     0.0
1129     0.0     0.0
1
   3   1   7 100   8   0   0   0   1   0   3.   1.3.2E7
 8 3  -.0724    250.
 9 3  -.0724    220.
10 3  -.0724    240.
11 3  -.0724    240.
 829   .0724     0.0
 929   .0724     0.0
1029   .0724     0.0
1129   .0724     0.0
```

```
U.S.G.S. METHOD-OF-CHARACTERISTICS MODEL FOR SOLUTE TRANSPORT IN GROUND WATER
BABYLON,LEVELS,CHLORIDE                                                00000000
                    I N P U T    D A T A

                      GRID DESCRIPTORS

             NX     (NUMBER OF COLUMNS)  :     18
             NY     (NUMBER OF ROWS)     :     31
             XDEL   (X-DISTANCE IN FEET) :   500.0
             YDEL   (Y-DISTANCE IN FEET) :   500.0

                      TIME  PARAMETERS

             NTIM    (MAX. NO. OF TIME STEPS)         :        3
             NPMP    (NO. OF PUMPING PERIODS)         :        3
             PINT    (PUMPING PERIOD IN YEARS)        :        3.000
             TIMX    (TIME INCREMENT MULTIPLIER)      :        1.00
             TINIT   (INITIAL TIME STEP IN SEC.)      :  0.31E+08

               HYDROLOGIC AND CHEMICAL PARAMETERS

             S        (STORAGE COEFFICIENT)          :       0.000500
             POROS    (EFFECTIVE POROSITY)           :       0.25
             BETA     (CHARACTERISTIC LENGTH)        :      40.0
             DLTRAT   (RATIO OF TRANSVERSE TO
                       LONGITUDINAL DISPERSIVITY)    :       0.20
             ANFCTR   (RATIO OF T-YY TO T-XX)        :       1.000000
 ***NON-DECAYING SPECIES***

 ***NON-SORBING SPECIES***

 ***ADIP USED***

 ***UNCONFINED AQUIFER***

                      EXECUTION PARAMETERS

             NITP    (NO. OF ITERATION PARAMETERS) :     7
             TOL     (CONVERGENCE CRITERIA - ADIP) :     0.0100
             ITMAX   (MAX.NO.OF ITERATIONS - ADIP) :   100
             CELDIS  (MAX.CELL DISTANCE PER MOVE
                          OF PARTICLES - M.O.C.)    :     0.500
             NPMAX   (MAX. NO. OF PARTICLES)        : 3820
             NPTPND  (NO. PARTICLES PER NODE)       :      4

                      PROGRAM OPTIONS

             NPNT    (TIME STEP INTERVAL FOR
                      COMPLETE PRINTOUT)      :      1
             NPNTMV  (MOVE INTERVAL FOR CHEM.
                      CONCENTRATION PRINTOUT) :      0
             NPNTVL  (PRINT OPTION-VELOCITY
                      0=NO; 1=FIRST TIME STEP;
                      2=ALL TIME STEPS)       :      0
             NPNTD   (PRINT OPTION-DISP.COEF.
                      0=NO; 1=FIRST TIME STEP;
                      2=ALL TIME STEPS)       :      0
             NUMOBS  (NO. OF OBSERVATION WELLS
                      FOR HYDROGRAPH PRINTOUT) :     3
             NREC    (NO. OF PUMPING WELLS)    :     8

             NCODES  (FOR NODE IDENT.)         :     1
             NPNCHV  (PUNCH VELOCITIES)        :     0
             NPDELC  (PRINT OPT.-CONC. CHANGE) :     1
TIME INTERVALS (IN SECONDS)
   0.31000E+08 0.31000E+08 0.31000E+08 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00

          LOCATION OF OBSERVATION WELLS

                 NO.      X      Y

                  1       8      4
                  2      10     16
                  3      10     26

          LOCATION  OF  PUMPING  WELLS

          X    Y    RATE(IN CFS)    CONC.

          8    3    -.724E-01      250.00
          9    3    -.724E-01      220.00
         10    3    -.724E-01      240.00
         11    3    -.724E-01      240.00
          8   29    0.724E-01        0.00
          9   29    0.724E-01        0.00
         10   29    0.724E-01        0.00
         11   29    0.724E-01        0.00

          AREA OF ONE CELL =    2.5000E+05

          X-Y SPACING:
              500.00
              500.00
```

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AQUIFER THICKNESS (FT)
    0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
    0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
WATER TABLE
    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
    0.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.   47.    0.
    0.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.   46.    0.
    0.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.    0.
    0.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.   45.    0.
    0.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.   43.    0.
    0.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.   42.    0.
    0.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.    0.
    0.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.   41.    0.
    0.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.    0.
    0.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.   39.    0.
    0.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.   38.    0.
    0.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.   37.    0.
    0.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.   36.    0.
    0.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.   35.    0.
    0.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.   34.    0.
    0.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.   33.    0.
    0.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.   32.    0.
    0.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.   31.    0.
    0.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.   30.    0.
    0.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.   29.    0.
    0.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.   28.    0.
    0.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.   27.    0.
    0.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.   26.    0.
    0.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.    0.
    0.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.   25.    0.
    0.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.   24.    0.
    0.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.   23.    0.
    0.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.    0.
    0.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.   22.    0.
    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.    0.
```

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TRANSMISSIVITY MAP (FT*FT/SEC)
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01
   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   1.45E-01   0.00E+00
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00   0.00E+00
```

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PERMEABILTY MAP (FT/SEC)
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03
   5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  5.79E-03  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00


      NO. OF FINITE-DIFFERENCE CELLS IN AQUIFER =  484

      AREA OF AQUIFER IN MODEL  =  1.18000E+08 SQ. FT.


      NZCRIT   (MAX. NO. OF CELLS THAT CAN BE VOID OF
                PARTICLES;  IF EXCEEDED, PARTICLES ARE REGENERATED)   =    9
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DIFFUSE RECHARGE AND DISCHARGE (FT/SEC)
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00

NODE IDENTIFICATION MAP

    0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0   2   2   2   2   2   2   2   2   2   2   2   2   2   2   2   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   0   0   0   0   0   0   0   0   0   0   0   0   0   0   2   0
    0   2   2   2   2   2   2   2   2   2   2   2   2   2   2   2   2   0
    0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0

   NO. OF NODE IDENT. CODES SPECIFIED =   1

        THE FOLLOWING ASSIGNMENTS HAVE BEEN MADE:
  CODE NO.      LEAKANCE     SOURCE CONC.     RECHARGE

      2         1.000E+00     0.000E+00
```

```
VERTICAL PERMEABILITY/THICKNESS (FT/(FT*SEC))
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
   1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  1.00E+00  0.00E+00
   0.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00
   1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  1.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00
   0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00  0.00E+00

HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :      0
       TIME(SECONDS) :  0.00000E+00
       TIME(DAYS)    :  0.00000E+00
       TIME(YEARS)   :  0.00000E+00

   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000
  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000  46.6000000   0.0000000
   0.0000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000
  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000  45.9000000   0.0000000
   0.0000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000
  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000  45.3000000   0.0000000
   0.0000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000
  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000  44.5000000   0.0000000
   0.0000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000
  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000  43.2000000   0.0000000
   0.0000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000
  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000  41.8000000   0.0000000
   0.0000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000
  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000  41.4000000   0.0000000
   0.0000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000
  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000  40.5000000   0.0000000
  0.0000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000
 39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000  39.4000000   0.0000000
  0.0000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000
 38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000  38.7000000   0.0000000
  0.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000
 38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000  38.0000000   0.0000000
  0.0000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000
 36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000  36.7000000   0.0000000
  0.0000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000
 35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000  35.7000000   0.0000000

  0.0000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000
 34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000  34.8000000   0.0000000
  0.0000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000
 33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000  33.7000000   0.0000000
  0.0000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000
 32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000  32.8000000   0.0000000
  0.0000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000
 31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000  31.8000000   0.0000000
  0.0000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000
 30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000  30.7000000   0.0000000
  0.0000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000
 29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000  29.7000000   0.0000000
  0.0000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000
 28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000  28.8000000   0.0000000
  0.0000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000
 27.9000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000  27.9000000   0.0000000
  0.0000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000
 27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000  27.3000000   0.0000000
  0.0000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000
 26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000  26.4000000   0.0000000
  0.0000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000
 25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000  25.4000000   0.0000000
  0.0000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000
 24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000  24.8000000   0.0000000
  0.0000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000
 23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000  23.8000000   0.0000000
  0.0000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000
 22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000  22.8000000   0.0000000
  0.0000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000
 22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000  22.3000000   0.0000000
  0.0000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000
 21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000  21.8000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
```

```
ITERATION PARAMETERS
    2.568E-03 6.938E-03 1.875E-02 5.067E-02 1.369E-01 3.700E-01 1.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
    0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00 0.000E+00
```

```
CONCENTRATION

NUMBER OF TIME STEPS =         0
        TIME(SECONDS) =   0.00000E+00
  CHEM.TIME(SECONDS) =   0.00000E+00
  CHEM.TIME(DAYS)    =   0.00000E+00
        TIME(YEARS)  =   0.00000E+00
  CHEM.TIME(YEARS)   =   0.00000E+00
 NO. MOVES COMPLETED =        0

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

CONCENTRATION
NUMBER OF TIME STEPS =     0

   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

 N =      1
 NUMBER OF ITERATIONS =      6
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      1
      TIME(SECONDS) =  3.10000E+07
      TIME(DAYS)    =  3.58796E+02
      TIME(YEARS)   =  9.82331E-01

  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
  0.0000000 46.5999996 46.5999996 46.5999995 46.5999995 46.5999995 46.5999996 46.5999997 46.5999997 46.5999997
 46.5999997 46.5999996 46.5999995 46.5999995 46.5999995 46.5999996 46.5999996  0.0000000
  0.0000000 45.9000000 45.8477605 45.8042823 45.7843183 45.7812381 45.8430763 46.0089073 46.0583986 46.0583986
 46.0089073 45.8430763 45.7812381 45.7843183 45.8042823 45.8477605 45.9000000  0.0000000
  0.0000000 45.2999998 45.0668435 44.9842694 44.9421200 44.9393779 44.9708177 45.0362089 45.0684352 45.0684353
 45.0362089 44.9708177 44.9393779 44.9421200 44.9842694 45.0668435 45.2999998  0.0000000
  0.0000000 44.4999995 44.2163277 44.1041722 44.0808331 44.0524102 44.0688521 44.0835343 44.1105889 44.1105888
 44.0835343 44.0688521 44.0524102 44.0808331 44.1041722 44.2163277 44.4999995  0.0000000
  0.0000000 43.1999999 43.1738841 43.1552862 43.1443115 43.1425302 43.1487400 43.1612454 43.1894249 43.1894249
 43.1612454 43.1487400 43.1425302 43.1443115 43.1552862 43.1738841 43.1999999  0.0000000
  0.0000000 41.8000008 42.1205816 42.1999832 42.2169509 42.2215205 42.2261507 42.2317007 42.2365205 42.2365205
 42.2317007 42.2261507 42.2215205 42.2169509 42.1999832 42.1205816 41.8000008  0.0000000
  0.0000000 41.3999997 41.3137080 41.3048461 41.3053802 41.3053630 41.3054480 41.3063182 41.3070860 41.3070860
 41.3063182 41.3054480 41.3053630 41.3053802 41.3048461 41.3137080 41.3999997  0.0000000
  0.0000000 40.4999998 40.4253176 40.4021961 40.3918028 40.3850381 40.3809563 40.3789189 40.3780738 40.3780738
 40.3789189 40.3809563 40.3850381 40.3918028 40.4021961 40.4253176 40.4999998  0.0000000
  0.0000000 39.4000003 39.4855380 39.4869707 39.4738945 39.4623150 39.4546083 39.4502554 39.4483125 39.4483125
 39.4502554 39.4546083 39.4623150 39.4738945 39.4869707 39.4855380 39.4000003  0.0000000
  0.0000000 38.7000000 38.6318695 38.5854510 38.5559016 38.5374547 38.5262942 38.5200001 38.5171986 38.5171986
 38.5200001 38.5262942 38.5374547 38.5559016 38.5854510 38.6318695 38.7000000  0.0000000
  0.0000000 37.8999995 37.7562088 37.6870174 37.6271533 37.6058244 37.5934845 37.5885288 37.5834419 37.5834419
 37.5885288 37.5934845 37.6058244 37.6271533 37.6870174 37.7562088 37.8999995  0.0000000
  0.0000000 36.7000002 36.7231428 36.7005824 36.6778611 36.6623313 36.6529907 36.6478285 36.6458114 36.6458114
 36.6478285 36.6529907 36.6623313 36.6778611 36.7005824 36.7231428 36.7000002  0.0000000
  0.0000000 35.7000001 35.7378610 35.7333057 35.7228454 35.7148076 35.7099240 35.7073071 35.7062489 35.7062489
 35.7073071 35.7099240 35.7148076 35.7228454 35.7333057 35.7378610 35.7000001  0.0000000

  0.0000000 34.8999997 34.7861150 34.7714855 34.7658956 34.7648833 34.7651040 34.7656383 34.7660483 34.7660483
 34.7656383 34.7651040 34.7648833 34.7658956 34.7714855 34.7861150 34.8999997  0.0000000
  0.0000000 33.7000002 33.7718708 33.7920870 33.8022785 33.8106230 33.8176112 33.8228340 33.8262417 33.8262417
 33.8228340 33.8176112 33.8106230 33.8022785 33.7920870 33.7718708 33.7000002  0.0000000
  0.0000000 32.7999999 32.8020554 32.8213616 32.8423617 32.8604126 32.8741624 32.8833615 32.8878311 32.8878311
 32.8833615 32.8741624 32.8604126 32.8423617 32.8213616 32.8020554 32.7999999  0.0000000
  0.0000000 31.8000000 31.8138745 31.8495289 31.8847165 31.9134036 31.9344584 31.9481613 31.9548488 31.9548488
 31.9481613 31.9344584 31.9134036 31.8847165 31.8495289 31.8138745 31.8000000  0.0000000
  0.0000000 30.7000001 30.8037709 30.8782136 30.9334525 30.9738542 31.0020204 31.0188485 31.0284157 31.0284157
 31.0188485 31.0020204 30.9738542 30.9334525 30.8782136 30.8037709 30.7000001  0.0000000
  0.0000000 29.7000000 29.8243688 29.9285016 29.9978851 30.0478510 30.0810188 30.1013742 30.1110233 30.1110233
 30.1013742 30.0810188 30.0478510 29.9978851 29.9285016 29.8243688 29.7000000  0.0000000
  0.0000000 28.8000004 28.8863486 29.0023486 29.0837229 29.1388750 29.1714055 29.1926237 29.2026639 29.2026639
 29.1926237 29.1714055 29.1388750 29.0837229 29.0023486 28.8863486 28.8000004  0.0000000
  0.0000000 27.8000001 28.0399844 28.1332465 28.1987945 28.2449757 28.2763188 28.2956308 28.3048440 28.3048440
 28.2956308 28.2763188 28.2449757 28.1987945 28.1332465 28.0399844 27.8000001  0.0000000
  0.0000000 27.2999998 27.2603709 27.2818294 27.3333150 27.3682611 27.3933222 27.4068470 27.4182540 27.4182540
 27.4068470 27.3933222 27.3682611 27.3333150 27.2818294 27.2603709 27.2999998  0.0000000
  0.0000000 26.3999999 26.4089459 26.4408873 26.4739020 26.5007507 26.5182544 26.5299784 26.5348115 26.5348115
 26.5299784 26.5182544 26.5007507 26.4739020 26.4408873 26.4089459 26.3999999  0.0000000
  0.0000000 25.4000003 25.5338241 25.5863835 25.6203370 25.6409178 25.6522656 25.6568134 25.6579171 25.6579171
 25.6568134 25.6522656 25.6409178 25.6203370 25.5863835 25.5338241 25.4000003  0.0000000
 0.0000000  24.7999997  24.7412715  24.7573188  24.7800812  24.7831222  24.7843653  24.7884531  24.7830717  24.7830717
24.7884531  24.7843653  24.7831222  24.7800812  24.7573188  24.7412715  24.7999997   0.0000000
 0.0000000  23.8000000  23.8713872  23.9207781  23.9478685  23.9543846  23.9419982  23.9177498  23.9021510  23.9021510
23.9177498  23.9419982  23.9543846  23.9478685  23.9207781  23.8713872  23.8000000   0.0000000
 0.0000000  22.8000004  23.0234438  23.1087840  23.1361410  23.1340229  23.1019610  23.0373506  23.0058120  23.0058120
23.0373506  23.1019610  23.1340228  23.1361410  23.1087840  23.0234435  22.8000004   0.0000000
 0.0000000  22.2999999  22.3176188  22.3450875  22.3575886  22.3474242  22.2844726  22.1284416  22.0780000  22.0780000
22.1284416  22.2844726  22.3474242  22.3575886  22.3450875  22.3176188  22.2999999   0.0000000
 0.0000000  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000003  21.8000003  21.8000003
21.8000003  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000


         HEAD DISTRIBUTION - ROW
         NUMBER OF TIME STEPS =      1
                TIME(SECONDS) =  3.10000E+07
                TIME(DAYS)    =  3.58796E+02
                TIME(YEARS)   =  9.82331E-01

           0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
           0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
           0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
           0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
           0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
           0  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43   0
           0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
           0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
           0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
           0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
           0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
           0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
           0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
           0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
           0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35   0
           0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
           0  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33   0
           0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
           0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
           0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
           0  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29   0
           0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
           0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
           0  26  26  26  26  27  27  27  27  27  27  27  27  26  26  26  26   0
           0  26  26  26  26  26  26  26  26  26  26  26  26  26  26  26  25   0
           0  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25   0
           0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
           0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0

           0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
           0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
           0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
DRAWDOWN
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
         0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
AQUIFER THICKNESS
       0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  24.8  24.9  24.9  24.9  24.9  25.1  25.2  25.2  25.1  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  24.8  24.7  24.6  24.6  24.7  24.7  24.8  24.8  24.7  24.7  24.6  24.6  24.7  24.8  25.0   0.0
       0.0  25.0  24.7  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.7  25.0   0.0
       0.0  25.0  25.0  25.0  24.9  24.9  24.9  25.0  25.0  25.0  25.0  24.9  24.9  24.9  25.0  25.0  25.0   0.0
       0.0  25.0  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  24.8  24.7  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.7  24.8  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
       0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.2  25.2  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
       0.0  25.0  25.1  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.3  25.2  25.2  25.1  25.0   0.0
       0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
       0.0  25.0  25.3  25.4  25.5  25.5  25.6  25.6  25.6  25.6  25.6  25.6  25.5  25.5  25.4  25.3  25.0   0.0
       0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
       0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
       0.0  25.0  24.9  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  25.0   0.0
       0.0  25.0  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.0   0.0
       0.0  25.0  25.2  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.2  25.0   0.0
       0.0  25.0  25.0  25.0  25.1  25.0  25.0  24.8  24.8  24.8  24.8  25.0  25.0  25.1  25.0  25.0  25.0   0.0
       0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
       0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
    0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

  CUMULATIVE MASS BALANCE -- (IN FT**3)

   RECHARGE                    :  0.00000E+00
   INJECTION                   : -8.97760E+06
   PUMPAGE                     :  8.97760E+06
   CUMULATIVE  NET  PUMPAGE    :  0.00000E+00
   WATER RELEASE FROM STORAGE  : -2.08365E+03
   LEAKAGE INTO AQUIFER        : -9.54561E+07
   LEAKAGE OUT OF AQUIFER      :  9.54658E+07
   CUMULATIVE  NET  LEAKAGE    :  9.55200E+03

       MASS BALANCE RESIDUAL   : -1.16320E+04
       ERROR  (AS PERCENT)     : -1.11378E-02

  RATE MASS BALANCE -- (IN C.F.S.)

   RECHARGE                    :  0.00000E+00
   LEAKAGE INTO AQUIFER        :  3.07922E+00
   LEAKAGE OUT OF AQUIFER      : -3.07954E+00
   NET LEAKAGE     (QNET)      : -3.41058E-04
   INJECTION                   : -2.89600E-01
   PUMPAGE                     :  2.89600E-01
   NET WITHDRAWAL    (TPUM)    :  0.00000E+00

CONCENTRATION

NUMBER OF TIME STEPS :      1
       DELTA T       :  3.10000E+07
       TIME(SECONDS) :  3.10000E+07
  CHEM.TIME(SECONDS) :  3.09999E+07
  CHEM.TIME(DAYS)    :  3.58795E+02
       TIME(YEARS)   :  9.82331E-01
  CHEM.TIME(YEARS)   :  9.82329E-01
 NO. MOVES COMPLETED :      9

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0002   -0.0245    4.6389    4.4151    4.8023

    4.4454   -0.0235   -0.0002    0.0000    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0056    1.5823  103.7530   91.1856   99.1863

   98.7010    1.5207   -0.0084    0.0000    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0003    0.1510   31.6814   95.8457   92.6082  100.4892

   82.2282   30.8634    0.1452    0.0003    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0004    0.1718   16.7136   66.8331   63.6866   68.9285

   63.5437   16.0851    0.1851    0.0004    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0001    0.0451    1.3456   17.5782   16.1198   17.4346

   16.9566    1.2950    0.0434    0.0001    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0016    0.0833    1.6168    1.6971    1.8388

    1.6595    0.0802    0.0016    0.0000    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0001    0.0055    0.1173    0.1183    0.1280

    0.1133    0.0053    0.0001    0.0000    0.0000    0.0000    0.0000    0.0000

    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0004    0.0085    0.0068    0.0075

    0.0084    0.0003    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0003    0.0004    0.0004
    0.0003    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000   -0.0000   -0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000   -0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000   -0.0000   -0.0000   -0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000   -0.0000   -0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000   -0.0000   -0.0000   -0.0000    0.0000    0.0000

    0.0000    0.0000   -0.0000   -0.0000    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000    0.0000   -0.0000   -0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000    0.0000    0.0000   -0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000   -0.0000    0.0000    0.0000   -0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION

NUMBER OF TIME STEPS :      1

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    5    4    5    4    0    0    0    0    0    0    0
    0    0    0    0    0    0    2  104   81   99  100    2    0    0    0    0    0    0
    0    0    0    0    0    0   32   86   83  100   82   31    0    0    0    0    0    0
    0    0    0    0    0    0   17   66   64   68   64   16    0    0    0    0    0    0
    0    0    0    0    0    0    1   18   16   17   17    1    0    0    0    0    0    0
    0    0    0    0    0    0    0    2    2    2    2    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

 CHEMICAL MASS BALANCE

        MASS IN BOUNDARIES      :  0.00000E+00
        MASS OUT BOUNDARIES     : -3.10219E-06
        MASS PUMPED IN          :  2.13217E+09
        MASS PUMPED OUT         :  0.00000E+00
        INFLOW MINUS OUTFLOW    :  2.13217E+09
        INITIAL MASS STORED     :  0.00000E+00
        PRESENT MASS STORED     :  1.91464E+09
        CHANGE MASS STORED      :  1.91464E+09
      COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION:
        MASS BALANCE RESIDUAL   :  2.17534E+08
        ERROR  (AS PERCENT)     :  1.02025E+01
```

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BABYLON,LEVELS,CHLORIDE                                                         00000000

     TIME VERSUS HEAD AND CONCENTRATION AT SELECTED OBSERVATION POINTS
            PUMPING PERIOD NO.    1


              TRANSIENT  SOLUTION


                   OBS.WELL NO.      X    Y                    N      HEAD (FT)     CONC.(MG/L)     TIME (YEARS)
                        1            8    4


                                                               0        45.3            0.0            0.000
                                                               1        45.0           95.8            0.982
                                                               2        45.0          108.1            1.965
                                                               3        45.0          108.3            2.947
                   OBS.WELL NO.      X    Y                    N      HEAD (FT)     CONC.(MG/L)     TIME (YEARS)
                        2           10   16


                                                               0        33.7            0.0            0.000
                                                               1        33.8            0.0            0.982
                                                               2        33.8            0.0            1.965
                                                               3        33.8            0.0            2.947
                   OBS.WELL NO       X    Y                    N      HEAD (FT)     CONC.(MG/L)     TIME (YEARS)
                        3           10   26


                                                               0        24.8            0.0            0.000
                                                               1        24.8            0.0            0.982
                                                               2        24.8            0.0            1.965
                                                               3        24.8            0.0            2.947


        START PUMPING PERIOD NO.  2

     THE FOLLOWING TIME STEP, PUMPAGE, AND PRINT PARAMETERS HAVE BEEN REDEFINED:

                  NTIM    :     1
                  NPNT    :     1
                  NITP    :     7
                  ITMAX   :   100
                  NREC    :     8
                  NPNTMV  :     0
                  NPNTVL  :     0
                  NPNTD   :     0
                  NPDELC  :     1
                  NPNCHV  :     0
                  PINT    :        4.000
                  TIMX    :        1.000
                  TINIT   : **********

TIME INTERVALS (IN SECONDS)
   0.12000E+08 0.12000E+08 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
         LOCATION  OF  PUMPING  WELLS

          X    Y    RATE(IN CFS)    CONC.

          8    3    0.000E+00        0.00
          9    3    0.000E+00        0.00
         10    3    0.000E+00        0.00
         11    3    0.000E+00        0.00
          8   28    0.000E+00        0.00
          9   28    0.000E+00        0.00
         10   28    0.000E+00        0.00
         11   28    0.000E+00        0.00


N :      1
NUMBER OF ITERATIONS :     8
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :       1
       TIME(SECONDS) :  2.13000E+08
       TIME(DAYS)    :  2.46528E+03
       TIME(YEARS)   :  6.74956E+00

  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
  0.0000000 46.5999996 46.5999995 46.5999995 46.5999995 46.5999995 46.5999995 46.5999995 46.5999995 46.5999995
 46.5999995 46.5999995 46.5999995 46.5999995 46.5999995 46.5999995 46.5999996  0.0000000
  0.0000000 45.9000000 45.8425185 45.7910140 45.7578887 45.7365823 45.7289686 45.7216221 45.7183524 45.7183524
 45.7216221 45.7289686 45.7365823 45.7578887 45.7910140 45.8425185 45.9000000  0.0000000
  0.0000000 45.2999998 45.0780821 44.9588056 44.8961128 44.8617243 44.8435000 44.8333879 44.8289481 44.8289481
 44.8333879 44.8435000 44.8617243 44.8961128 44.9588056 45.0780821 45.2999998  0.0000000
  0.0000000 44.4999995 44.1975187 44.0857815 43.9999980 43.9638130 43.9431840 43.9323251 43.9273339 43.9273339
 43.9323251 43.9431840 43.9638130 43.9999980 44.0857815 44.1975187 44.4999995  0.0000000
  0.0000000 43.1999999 43.1503415 43.1118480 43.0785749 43.0552393 43.0382931 43.0282409 43.0232423 43.0232423
 43.0282409 43.0382931 43.0552393 43.0785749 43.1118480 43.1503415 43.1999999  0.0000000
  0.0000000 41.8000008 42.1048084 42.1662488 42.1671306 42.1548227 42.1424153 42.1338230 42.1291366 42.1291366
 42.1338230 42.1424153 42.1548227 42.1671306 42.1662488 42.1048085 41.8000008  0.0000000
  0.0000000 41.3999997 41.3018053 41.2810808 41.2678446 41.2541251 41.2423809 41.2339288 41.2296867 41.2296867
 41.2339288 41.2423809 41.2541251 41.2678446 41.2810808 41.3018053 41.3999997  0.0000000
  0.0000000 40.4999998 40.4139829 40.3801153 40.3588855 40.3422026 40.3292833 40.3204099 40.3159866 40.3159866
 40.3204099 40.3292833 40.3422026 40.3588855 40.3801153 40.4139828 40.4999998  0.0000000
  0.0000000 39.4000003 39.4773219 39.4697504 39.4487013 39.4294228 39.4148242 39.4051878 39.4004584 39.4004584
 39.4051878 39.4148242 39.4294228 39.4487013 39.4697504 39.4773219 39.4000003  0.0000000
  0.0000000 38.7000000 38.6258147 38.5728228 38.5360911 38.5110917 38.4943349 38.4839856 38.4790139 38.4790139
 38.4839856 38.4943349 38.5110917 38.5360911 38.5728229 38.6258147 38.7000000  0.0000000
  0.0000000 37.8999995 37.7474038 37.6509529 37.6034858 37.5757737 37.5588088 37.5484878 37.5438782 37.5438782
 37.5484878 37.5588088 37.5757738 37.6034858 37.6509529 37.7474038 37.8999995  0.0000000
  0.0000000 36.7000002 36.7137007 36.6824014 36.6531125 36.6318877 36.6178923 36.6098139 36.6058449 36.6058449
 36.6098139 36.6178923 36.6318877 36.6531125 36.6824014 36.7137007 36.7000002  0.0000000
  0.0000000 35.7000001 35.7308182 35.7188545 35.7020718 35.6886830 35.6795450 35.6740733 35.6714802 35.6714802
 35.6740733 35.6795450 35.6886830 35.7020718 35.7188548 35.7308182 35.7000001  0.0000000
  0.0000000 34.8999997 34.7883272 34.7578903 34.7454237 34.7391833 34.7358848 34.7339180 34.7331813 34.7331813
 34.7339180 34.7358848 34.7391833 34.7454287 34.7578903 34.7883272 34.8999997  0.0000000
  0.0000000 33.7000002 33.7654835 33.7789550 33.7843184 33.7885258 33.7921191 33.7947842 33.7961832 33.7961832
 33.7947842 33.7921191 33.7885258 33.7843184 33.7789550 33.7654835 33.7000002  0.0000000
  0.0000000 32.7999999 32.7987966 32.8113181 32.8277878 32.8422262 32.8534181 32.8608335 32.8647193 32.8647193
 32.8608335 32.8534181 32.8422262 32.8277878 32.8113181 32.7987966 32.7999999  0.0000000
  0.0000000 31.7999999 31.8092373 31.8408302 31.8728173 31.8992262 31.9188845 31.9313369 31.9375974 31.9375974
 31.9313369 31.9188845 31.8992262 31.8728173 31.8408302 31.8092373 31.7999999  0.0000000
  0.0000000 30.7000001 30.8012351 30.8732453 30.9273246 30.9670941 30.9949828 31.0125859 31.0211792 31.0211792
 31.0125859 30.9949828 30.9670941 30.9273246 30.8732453 30.8012352 30.7000001  0.0000000
  0.0000000 29.7000000 29.8244483 29.9287347 30.0000781 30.0513088 30.0880729 30.1077027 30.1181504 30.1181504
 30.1077027 30.0880729 30.0513088 30.0000781 29.9287347 29.8244484 29.7000000  0.0000000
  0.0000000 28.8000004 28.9724589 29.0131720 29.0994884 29.1568898 29.1953080 29.2191826 29.2308906 29.2308906
 29.2191826 29.1953080 29.1568899 29.0994884 29.0131720 28.9724589 28.8000004  0.0000000
  0.0000000 27.8000001 28.0511740 28.1540028 28.2280862 28.2817552 28.3193832 28.3433999 28.3550774 28.3550774
 28.3433999 28.3193832 28.2817552 28.2280862 28.1540028 28.0511740 27.8000001  0.0000000
  0.0000000 27.2999998 27.2728117 27.3185459 27.3692767 27.4147322 27.4490441 27.4718047 27.4830177 27.4830177
 27.4718047 27.4490441 27.4147322 27.3692767 27.3185460 27.2728117 27.2999998  0.0000000
  0.0000000 26.4000000 26.4215096 26.4968081 26.5138320 26.5545281 26.5858808 26.6070417 26.6175690 26.6175690
 26.6070417 26.5858808 26.5545281 26.5138320 26.4968082 26.4215096 26.4000000  0.0000000
  0.0000000 25.4000003 25.5493801 25.6188445 25.6677788 25.7064806 25.7358828 25.7552417 25.7650979 25.7650979
 25.7552417 25.7358828 25.7064806 25.6677788 25.6188449 25.5493801 25.4000003  0.0000000
  0.0000000 24.7999997 24.7569863 24.7891172 24.8305985 24.8660437 24.8930335 24.9107884 24.9199503 24.9199503
 24.9107884 24.8930335 24.8660437 24.8305986 24.7891172 24.7569863 24.7999997  0.0000000
```

```
  0.0000000  23.8000000  23.8844573  23.9500207  23.9981036  24.0327948  24.0573516  24.0731559  24.0811385  24.0811385
 24.0731559  24.0573516  24.0327948  23.9981036  23.9500207  23.8844573  23.8000000   0.0000000
  0.0000000  22.8000004  23.0383401  23.1339075  23.1848253  23.2156756  23.2350334  23.2484276  23.2538255  23.2538255
 23.2484277  23.2350334  23.2156756  23.1848253  23.1339075  23.0383401  22.8000004   0.0000000
  0.0000000  22.2999998  22.3259852  22.3838441  22.3902578  22.4070308  22.4180778  22.4238533  22.4272111  22.4272111
 22.4238533  22.4180778  22.4070308  22.3902578  22.3838441  22.3259852  22.2999998   0.0000000
  0.0000000  21.8000004  21.8000004  21.8000004  21.8000005  21.8000005  21.8000005  21.8000005  21.8000005  21.8000005
 21.8000005  21.8000005  21.8000005  21.8000005  21.8000004  21.8000004  21.8000004   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
 .0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000


                  HEAD DISTRIBUTION - ROW
                  NUMBER OF TIME STEPS =        1
                         TIME(SECONDS) =  2.13000E+08
                         TIME(DAYS)    =  2.46528E+03
                         TIME(YEARS)   =  6.74956E+00

            0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
            0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
            0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
            0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
            0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
            0  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43   0
            0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
            0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
            0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
            0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
            0  39  39  39  39  39  38  38  38  38  38  38  39  39  39  39  39   0
            0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
            0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
            0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
            0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35   0
            0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
            0  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33   0
            0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
            0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
            0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
            0  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29   0
            0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
            0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
            0  26  26  26  27  27  27  27  27  27  27  27  27  27  26  26  26   0
            0  25  26  26  26  26  26  26  26  26  26  26  26  26  26  26  25   0
            0  25  25  25  25  25  25  25  25  25  25  25  25  25  26  26  25   0
            0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
            0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0
            0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
            0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
            0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
DRAWDOWN
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     1     1     1     1     1     1     1     1     1     1     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
AQUIFER THICKNESS
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.8  24.7  24.6  24.6  24.5  24.5  24.5  24.5  24.5  24.5  24.6  24.6  24.7  24.6  25.0   0.0
   0.0  25.0  24.7  24.6  24.5  24.5  24.4  24.4  24.4  24.4  24.4  24.4  24.5  24.5  24.6  24.7  25.0   0.0
   0.0  25.0  25.0  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0  25.0   0.0
   0.0  25.0  25.3  25.4  25.4  25.4  25.3  25.3  25.3  25.3  25.3  25.3  25.4  25.4  25.4  25.3  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.0   0.0
   0.0  25.0  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  25.0   0.0
   0.0  25.0  24.7  24.7  24.6  24.6  24.6  24.5  24.5  24.5  24.5  24.6  24.6  24.6  24.7  24.7  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.3  25.4  25.5  25.6  25.6  25.6  25.6  25.6  25.6  25.6  25.6  25.5  25.4  25.3  25.0   0.0
   0.0  25.0  25.2  25.3  25.3  25.4  25.4  25.4  25.5  25.5  25.4  25.4  25.4  25.3  25.3  25.2  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.2  25.2  25.2  25.2  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.1  25.1  25.2  25.2  25.2  25.2  25.2  25.2  25.2  25.2  25.1  25.1  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.3  25.4  25.4  25.4  25.4  25.3  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  25.2  25.3  25.4  25.4  25.4  25.4  25.5  25.5  25.4  25.4  25.4  25.4  25.3  25.2  25.0   0.0
   0.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
   0.00 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
   0.00 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.00
   0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
   0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00

  CUMULATIVE MASS BALANCE -- (IN FT**3)

   RECHARGE                    :  0.00000E+00
   INJECTION                   : -2.69328E+07
   PUMPAGE                     :  2.69328E+07
   CUMULATIVE  NET  PUMPAGE    :  0.00000E+00
   WATER RELEASE FROM STORAGE  : -1.80546E+03
   LEAKAGE INTO AQUIFER        : -6.85863E+08
   LEAKAGE OUT OF AQUIFER      :  6.85880E+08
   CUMULATIVE  NET  LEAKAGE    :  1.71520E+04

       MASS BALANCE RESIDUAL   : -1.89440E+04
       ERROR  (AS PERCENT)     : -2.65767E-03

  RATE MASS BALANCE -- (IN C.F.S.)

   RECHARGE                    :  0.00000E+00
   LEAKAGE INTO AQUIFER        :  3.33167E+00
   LEAKAGE OUT OF AQUIFER      : -3.33167E+00
   NET LEAKAGE     (QNET)      : -3.24249E-05
   INJECTION                   :  0.00000E+00
   PUMPAGE                     :  0.00000E+00
   NET WITHDRAWAL    (TPUM)    :  0.00000E+00


CONCENTRATION

NUMBER OF TIME STEPS :      1
       DELTA T       :  1.20000E+08
       TIME(SECONDS) :  2.13000E+08
  CHEM.TIME(SECONDS) :  2.13000E+08
  CHEM.TIME(DAYS)    :  2.46528E+03
       TIME(YEARS)   :  6.74956E+00
  CHEM.TIME(YEARS)   :  6.74956E+00
 NO. MOVES COMPLETED :     32

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0004     0.0004     0.0004

   0.0004     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0013     0.0013     0.0014

   0.0013     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0001     0.0029     0.0028     0.0030

   0.0027     0.0001     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0006     0.0111     0.0110     0.0119

   0.0107     0.0005     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0002     0.0016     0.0298     0.0303     0.0327

   0.0288     0.0017     0.0002     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0000     0.0005     0.0076     0.1087     0.1090     0.1187

   0.1048     0.0073     0.0005     0.0000     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0000     0.0003     0.0036     0.0501     0.4916     0.5102     0.5419

   0.4781     0.0483     0.0037     0.0002     0.0000     0.0000     0.0000     0.0000

   0.0000     0.0000     0.0000     0.0001     0.0017     0.0214     0.2324     1.5848     1.6582     1.9924

   1.5583     0.2244     0.0267     0.0016     0.0001     0.0000     0.0000     0.0000
 0.0000    0.0000    0.0000    0.0005    0.0075    0.0922    0.8913    5.8873    5.8524    5.9459
 5.4959    0.8595    0.0688    0.0073    0.0005    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0001    0.0021    0.0277    0.3146    2.8981   16.1334   16.0272   18.0844
15.5886    2.8002    0.3034    0.0267    0.0026    0.0001    0.0000    0.0000
 0.0000    0.0000    0.0002    0.0058    0.0816    0.9106    7.4880   42.3588   43.1100   46.8447
40.9070    7.2201    0.8788    0.0789    0.0058    0.0002    0.0000    0.0000
 0.0000    0.0000    0.0004    0.0089    0.1671    1.8330   14.0410   63.8524   74.5975   74.9916
63.8972   13.5819    1.7682    0.1610    0.0085    0.0003    0.0000    0.0000
 0.0000    0.0000    0.0008    0.0189    0.2882    3.0444   20.5819   87.3113   93.9899   96.5426
85.3342   19.8984    2.9384    0.2872    0.0182    0.0006    0.0000    0.0000
 0.0000    0.0000    0.0012    0.0251    0.5125    5.1886   32.4196   97.7858  107.1180  112.2827
95.5470   31.3551    5.0025    0.4936    0.0242    0.0011    0.0000    0.0000
 0.0000    0.0000    0.0017    0.0330    0.8721    6.7891   39.4340  100.6872  110.0108  114.6827
98.8064   38.1154    6.5535    0.6473    0.0318    0.0016    0.0000    0.0000
 0.0000    0.0001    0.0024    0.0507    0.7543    7.4488   40.9165   98.2508  107.0890  111.6894
95.8945   39.5506    7.1809    0.7266    0.0488    0.0023    0.0001    0.0000
 0.0000    0.0001    0.0028    0.0530    0.7716    7.9245   38.2830   92.6168  103.6877  107.4381
91.4232   36.9780    7.6381    0.7433    0.0511    0.0027    0.0001    0.0000
 0.0000    0.0001    0.0026    0.0503    0.7309    7.0404   35.4392   86.8203   93.6808   97.4365
83 9580   37.1806    6.7885    0.7040    0.0489    0.0025    0.0001    0.0000
 0.0000    0.0001    0.0024    0.0427    0.6939    5.8983   31.4986   73.0483   78.3679   82.0687
71.4301   30.4648    5.8883    0.5722    0.0411    0.0023    0.0001    0.0000
 0.0000    0.0003    0.0064    0.0341    0.4019    3.8332   13.2571   46.1786   52.5300   53.7140
45.8852   12.8475    3.8862    0.3872    0.0325    0.0062    0.0003    0.0000
 0.0000    0.0002    0.0053    0.0778    0.2589    1.8277    7.8847   19.7181   20.3337   21.5444
19.2483    7.4061    1.7830    0.2476    0.0750    0.0051    0.0002    0.0000
 0.0000    0.0001    0.0021    0.0186    0.2281    0.7015    2.9244    7.0083    7.8183    7.9244
 6.8849    2.8310    0.6788    0.2172    0.0178    0.0020    0.0001    0.0000
 0.0000    0.0000    0.0005    0.0085    0.0753    0.1899    0.8406    2.1120    2.3117    2.4026
 2.0720    0.8143    0.1833    0.0727    0.0082    0.0004    0.0000    0.0000
 0.0000    0.0000    0.0002    0.0021    0.0219    0.0486    0.2818    0.5805    0.6046    0.6273
 0.5500    0.2438    0.0478    0.0212    0.0020    0.0001    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0006    0.0061    0.0117    0.0825    0.1316    0.1427    0.1477
 0.1281    0.0805    0.0113    0.0059    0.0006    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0001    0.0012    0.0024    0.0119    0.0261    0.0285    0.0285
 0.0256    0.0118    0.0023    0.0013    0.0001    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0000    0.0001    0.0003    0.0019    0.0047    0.0051    0.0053
 0.0046    0.0018    0.0003    0.0001    0.0000    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0002    0.0006    0.0006    0.0006
 0.0005    0.0002    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000

 0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
 0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

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CONCENTRATION

NUMBER OF TIME STEPS :      1

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    1    1    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    2    2    2    2    0    0    0    0    0    0    0
    0    0    0    0    0    0    1    6    6    6    5    1    0    0    0    0    0    0
    0    0    0    0    0    0    3   16   18   19   16    3    0    0    0    0    0    0
    0    0    0    0    0    1    7   42   43   47   41    7    1    0    0    0    0    0
    0    0    0    0    0    2   14   64   75   75   64   14    2    0    0    0    0    0
    0    0    0    0    0    3   21   87   94   88   85   20    3    0    0    0    0    0
    0    0    0    0    1    5   32   98  107  112   96   31    5    0    0    0    0    0
    0    0    0    0    1    7   39  101  110  115   99   38    7    1    0    0    0    0
    0    0    0    0    1    7   41   98  107  112   96   40    7    1    0    0    0    0
    0    0    0    0    1    8   38   93  104  107   91   37    8    1    0    0    0    0
    0    0    0    0    1    7   38   86   94   97   84   37    7    1    0    0    0    0
    0    0    0    0    1    6   31   73   78   82   71   30    6    1    0    0    0    0
    0    0    0    0    0    4   13   46   53   54   46   13    4    0    0    0    0    0
    0    0    0    0    0    2    8   20   20   22   19    7    2    0    0    0    0    0
    0    0    0    0    0    1    3    7    8    8    7    3    1    0    0    0    0    0
    0    0    0    0    0    0    1    2    2    2    2    1    0    0    0    0    0    0
    0    0    0    0    0    0    0    1    1    1    1    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0


 CHEMICAL MASS BALANCE

         MASS IN BOUNDARIES      =  0.00000E+00
         MASS OUT BOUNDARIES     = -1.63658E+03
         MASS PUMPED IN          =  6.39641E+09
         MASS PUMPED OUT         = -3.23828E-13
         INFLOW MINUS OUTFLOW    =  6.39641E+09
         INITIAL MASS STORED     =  0.00000E+00
         PRESENT MASS STORED     =  6.64812E+09
         CHANGE MASS STORED      =  6.64812E+09
       COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION:
         MASS BALANCE RESIDUAL   = -2.51716E+08
         ERROR  (AS PERCENT)     = -3.93526E+00
```

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BABYLON,LEVELS,CHLORIDE                                                 00000000

    TIME VERSUS HEAD AND CONCENTRATION AT SELECTED OBSERVATION POINTS
           PUMPING PERIOD NO.    2


              TRANSIENT  SOLUTION


                 OBS.WELL NO.      X     Y                  N       HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                      1            8     4

                                                            0          45.3           0.0           0.000
                                                            1          44.8           0.0           8.750
                 OBS.WELL NO.      X     Y                  N       HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                      2           10    16

                                                            0          33.7           0.0           0.000
                                                            1          33.8         114.7           8.750
                 OBS.WELL NO.      X     Y                  N       HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                      3           10    26

                                                            0          24.8           0.0           0.000
                                                            1          24.8           0.1           8.750


               START PUMPING PERIOD NO.  3
            THE FOLLOWING TIME STEP, PUMPAGE, AND PRINT PARAMETERS HAVE BEEN REDEFINED:

                        NTIM    :     3
                        NPNT    :     1
                        NITP    :     7
                        ITMAX   :   100
                        NREC    :     8
                        NPNTMV  :     0
                        NPNTVL  :     0
                        NPNTD   :     0
                        NPDELC  :     1
                        NPNCHV  :     0
                        PINT    :         3.000
                        TIMX    :         1.000
                        TINIT   : **********

TIME INTERVALS (IN SECONDS)
   0.32000E+08 0.32000E+08 0.32000E+08 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
   0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00 0.00000E+00
         LOCATION  OF  PUMPING  WELLS

          X   Y   RATE(IN CFS)   CONC.

          8   3   -.724E-01     250.00
          9   3   -.724E-01     220.00
         10   3   -.724E-01     240.00
         11   3   -.724E-01     240.00
          8  29   0.724E-01       0.00
          9  29   0.724E-01       0.00
         10  29   0.724E-01       0.00
         11  29   0.724E-01       0.00


 .N :      1
 NUMBER OF ITERATIONS :     8
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HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :      1
       TIME(SECONDS) :  2.450000E+08
       TIME(DAYS)    :  2.835658E+03
       TIME(YEARS)   :  7.763588E+00

   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
   0.0000000  46.5999998  46.5999996  46.5999995  46.5999995  46.5999996  46.5999996  46.5999997  46.5999997  46.5999997
  46.5999997  46.5999996  46.5999996  46.5999995  46.5999995  46.5999996  46.5999998   0.0000000
   0.0000000  45.9000000  45.8484048  45.8085370  45.7870265  45.7842177  45.8463983  45.0134366  45.0642459  45.0642459
  45.0134366  45.8463983  45.7842177  45.7870265  45.8085370  45.8484048  45.9000000   0.0000000
   0.0000000  45.2999998  45.0871431  44.9835133  44.9405984  44.9373521  44.9887012  45.0344846  45.0668831  45.0668831
  45.0344846  44.9887012  44.9373521  44.9405984  44.9835133  45.0871431  45.2999998   0.0000000
   0.0000000  44.4999995  44.2109538  44.0845426  44.0481504  44.0379021  44.0514341  44.0778323  44.0847880  44.0847880
  44.0778323  44.0514341  44.0379021  44.0481504  44.0845425  44.2109538  44.4999995   0.0000000
   0.0000000  43.1999999  43.1639078  43.1399815  43.1248841  43.1205495  43.1263781  43.1371810  43.1460814  43.1460814
  43.1371810  43.1263781  43.1205495  43.1248841  43.1399815  43.1639078  43.1999999   0.0000000
   0.0000000  41.8000008  42.1172636  42.1817316  42.2087710  42.2088590  42.2126235  42.2166977  42.2200558  42.2200558
  42.2166977  42.2126235  42.2088590  42.2087710  42.1817316  42.1172636  41.8000008   0.0000000
   0.0000000  41.3999997  41.3123250  41.3028011  41.3007342  41.2986639  41.2976076  41.2978760  41.2983580  41.2983580
  41.2978760  41.2976076  41.2986639  41.3007342  41.3028011  41.3123250  41.3999997   0.0000000
   0.0000000  40.4999996  40.4228343  40.3978454  40.3855046  40.3773644  40.3718464  40.3690534  40.3677482  40.3677482
  40.3690534  40.3718464  40.3773644  40.3855046  40.3178454  40.4228343  40.4999998   0.0000000
   0.0000000  39.4000003  39.4843249  39.4836946  39.4694018  39.4564134  39.4472061  39.4418473  39.4390603  39.4390603
  39.4418473  39.4472061  39.4564134  39.4694018  39.4836948  39.4843249  39.4000003   0.0000000
   0.0000000  38.7000000  38.6311256  38.5831283  38.5518550  38.5310692  38.5181285  38.5108385  38.5070576  38.5070576
  38.5108385  38.5181285  38.5310692  38.5518550  38.5831283  38.6311256  38.7000000   0.0000000
   0.0000000  37.8999995  37.7511489  37.6583527  37.6142886  37.5886404  37.5750811  37.5667034  37.5628282  37.5628282
  37.5667034  37.5750811  37.5886404  37.6142886  37.6583527  37.7511489  37.8999995   0.0000000
   0.0000000  36.7000002  36.7180380  36.6888846  36.6597822  36.6405200  36.6280994  36.6207807  36.6174289  36.6174289
  36.6207807  36.6280994  36.6405200  36.6597822  36.6888846  36.7180380  36.7000002   0.0000000
   0.0000000  35.7000001  35.7318659  35.7208955  35.7050436  35.6924761  35.6840510  35.6780187  35.6767386  35.6767386
  35.6780187  35.6840510  35.6924761  35.7050436  35.7208955  35.7318659  35.7000001   0.0000000

   0.0000000  34.8999997  34.7881425  34.7572583  34.7449221  34.7386287  34.7349882  34.7331374  34.7323714  34.7323714
  34.7331374  34.7349882  34.7386287  34.7449221  34.7572583  34.7881425  34.8999997   0.0000000
   0.0000000  33.7000002  33.7641083  33.7782743  33.7804541  33.7836263  33.7863853  33.7884701  33.7895762  33.7895762
  33.7884701  33.7863853  33.7836263  32.7804541  33.7782743  33.7641083  33.7000002   0.0000000
   0.0000000  32.7999999  32.7842330  32.8083083  32.8205276  32.8330200  32.8426263  32.8490730  32.8522653  32.8522653
  32.8490730  32.8426263  32.8330200  32.8205277  32.8083083  32.7842330  32.7999999   0.0000000
   0.0000000  31.7999999  31.8064287  31.8334684  31.8620871  31.8854784  31.9025344  31.9135708  31.9189207  31.9189207
  31.9135708  31.9025344  31.8854784  31.8620871  31.8334684  31.8064287  31.7999999   0.0000000
   0.0000000  30.7000001  30.7861012  30.8631488  30.9128614  30.9484082  30.9728598  30.9883240  30.9958522  30.9958522
  30.9883240  30.9728598  30.9484082  30.9128614  30.8631488  30.7861012  30.7000001   0.0000000
   0.0000000  29.7000000  29.8178861  29.9137632  29.9811883  30.0271143  30.0574818  30.0780809  30.0848288  30.0848288
  30.0780809  30.0574818  30.0271143  29.9811883  29.9137632  29.8178861  29.7000000   0.0000000
   0.0000000  28.8000004  28.8643118  28.9870669  29.0758618  29.1264594  29.1581787  29.1789448  29.1882639  29.1882639
  29.1789448  29.1581787  29.1264594  29.0758618  28.9870669  28.8643120  28.8000004   0.0000000
   0.0000000  27.8000001  28.0413500  28.1344772  28.1981881  28.2441811  28.2744303  28.2928085  28.3016785  28.3016785
  28.2928085  28.2744303  28.2441811  28.1981881  28.1344772  28.0413501  27.8000001   0.0000000
   0.0000000  27.2999998  27.2612330  27.2923577  27.3345664  27.3690028  27.3936266  27.4068236  27.4160561  27.4160561
  27.4068236  27.3936266  27.3690028  27.3345664  27.2923577  27.2612330  27.2999998   0.0000000
   0.0000000  26.3999999  26.4082087  26.4399386  26.4729981  26.4996992  26.5180763  26.5287037  26.5334766  26.5334766
  26.5287037  26.5180763  26.4996992  26.4729981  26.4399386  26.4082087  26.3999999   0.0000000
   0.0000000  25.4000003  25.5348820  25.5885321  25.6211013  25.6420303  25.6533728  25.6577748  25.6587902  25.6587902
  25.6577748  25.6533728  25.6420303  25.6211013  25.5885321  25.5348820  25.4000003   0.0000000
  0.0000000  24.7888887  24.7405874  24.7570855  24.7794330  24.7824399  24.7840430  24.7885490  24.7834217  24.7834217
 24.7885490  24.7840430  24.7824399  24.7794330  24.7570855  24.7405874  24.7888887   0.0000000
  0.0000000  23.8000000  23.8888235  23.9187485  23.9458790  23.9527132  23.9407884  23.9188548  23.9016239  23.9016240
 23.9188548  23.9407884  23.9527132  23.9458790  23.9187485  23.8888235  23.8000000   0.0000000
  0.0000000  22.8000004  23.0248839  23.1078289  23.1383276  23.1370879  23.1056387  23.0417826  23.0105335  23.0105335
 23.0417826  23.1056387  23.1370879  23.1383276  23.1078289  23.0248839  22.8000004   0.0000000
  0.0000000  22.2888888  22.3188226  22.3480587  22.3808828  22.3811811  22.2880810  22.1344281  22.0845788  22.0845788
 22.1344281  22.2880810  22.3811811  22.3808828  22.3480587  22.3188225  22.2888888   0.0000000
  0.0000000  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000003  21.8000003  21.8000003
 21.8000003  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
  0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS =      1
      TIME(SECONDS)  =  2.45000E+08
      TIME(DAYS)     =  2.83565E+03
      TIME(YEARS)    =  7.76358E+00

  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
  0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
  0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
  0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
  0  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43  43   0
  0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
  0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
  0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
  0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
  0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
  0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
  0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
  0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
  0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35   0
  0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
  0  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33   0
  0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
  0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
  0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
  0  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29   0
  0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
  0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
  0  26  26  26  26  26  27  27  27  27  27  27  26  26  26  26  26   0
  0  26  26  26  26  26  26  26  26  26  26  26  26  26  26  26  25   0
  0  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25  26   0
  0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
  0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0

  0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
  0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
DRAWDOWN
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
AQUIFER THICKNESS
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  25.1  25.2  25.2  25.1  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.8  24.7  24.6  24.6  24.7  24.7  24.8  24.8  24.7  24.7  24.6  24.6  24.7  24.8  25.0   0.0
   0.0  25.0<24.7  24.6  24.5  24.5  24.6  24.6  24.6  24.6  24.6  24.6  24.5  24.5  24.6  24.7  25.0   0.0
   0.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0   0.0
   0.0  25.0  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.8  24.7  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.7  24.8  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.3  25.4  25.5  25.5  25.6  25.6  25.6  25.6  25.6  25.6  25.5  25.5  25.4  25.3  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  24.9  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.2  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.2  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.0  24.8  24.8  24.8  24.8  25.0  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
  0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
  0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
  0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
 CUMULATIVE MASS BALANCE -- (IN FT**3)

  RECHARGE                          :  0.00000E+00
  INJECTION                         : -3.62000E+07
  PUMPAGE                           :  3.62000E+07
  CUMULATIVE  NET  PUMPAGE          :  0.00000E+00
  WATER RELEASE FROM STORAGE        : -1.61808E+03
  LEAKAGE INTO AQUIFER              : -7.84244E+08
  LEAKAGE OUT OF AQUIFER            :  7.84283E+08
  CUMULATIVE  NET  LEAKAGE          :  1.88880E+04

      MASS BALANCE RESIDUAL         : -2.04800E+04
      ERROR  (AS PERCENT)           : -2 486186E-03

 RATE MASS BALANCE -- (IN C.F.S.)

  RECHARGE                          :  0.00000E+00
  LEAKAGE INTO AQUIFER              :  3.07458E+00
  LEAKAGE OUT OF AQUIFER            : -3.07460E+00
  NET LEAKAGE      (QNET)           : -3.03984E-05
  INJECTION                         : -2.88600E-01
  PUMPAGE                           :  2.89600E-01
  NET WITHDRAWAL     (TPUM)         :  0.00000E+00


CONCENTRATION

NUMBER OF TIME STEPS :      1
       DELTA T       :  3.20000E+07
       TIME(SECONDS) :  2.45000E+08
  CHEM.TIME(SECONDS) :  2.45000E+08
  CHEM.TIME(DAYS)    :  2.83565E+03
       TIME(YEARS)   :  7.76358E+00
  CHEM.TIME(YEARS)   :  7.76358E+00
 NO. MOVES COMPLETED :      8

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000    -0.0002    -0.0300     4.8874     4.8871     4.8870
     4.7822    -0.0289    -0.0002     0.0000     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000    -0.0031     1.5831   118.3431   114.9488   125.0413
   114.8758     1.5020    -0.0030     0.0000     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0002     0.1198    23.7484   102.0508    82.7718   100.6887
    98.1712    22.8288     0.1150     0.0002     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0002     0.0784    15.9830    53.9888    67.5280    73.0828
    52.0632    16.3345     0.0735     0.0002     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0001     0.0088     0.8083     7.6247     9.8470    10.8845
     7.3808     0.5851     0.0083     0.0001     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000     0.0013     0.0712     1.3203     1.3244     1.4341
     1.2735     0.0685     0.0013     0.0000     0.0000     0.0000     0.0000     0.0000
     0.0000     0.0000     0.0000     0.0000     0.0000     0.0003     0.0107     0.1804     0.2120     0.2280
     0.1839     0.0103     0.0003     0.0000     0.0000     0.0000     0.0000     0.0000
  0.0000    0.0000    0.0000    0.0000    0.0001    0.0011    0.0127    0.1007    0.1081    0.1148
  0.0984    0.0123    0.0011    0.0001    0.0000    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0004    0.0059    0.0376    0.2809    0.2887    0.2933
  0.2510    0.0383    0.0057    0.0004    0.0000    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0001    0.0016    0.0193    0.1280    0.7117    0.8148    0.8539
  0.5979    0.1237    0.0188    0.0015    0.0001    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0004    0.0049    0.0595    0.4732    2.2485    2.7171    2.8880
  2.2133    0.4580    0.0574    0.0047    0.0004    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0001    0.0014    0.0157    0.1889    1.5085    5.9438    7.1805    7.4427
  5.7816    1.4803    0.1919    0.0151    0.0014    0.0001    0.0000    0.0000

  0.0000    0.0000    0.0003    0.0042    0.0582    0.5558    4.1125   18.2883   20.8848   21.9828
 17.7752    3.9826    0.5367    0.0561    0.0041    0.0003    0.0000    0.0000
  0.0000    0.0000    0.0008    0.0119    0.1479    1.3925    9.4479   41.5005   44.2832   47.2838
 40.2785    9.1531    1.3449    0.1427    0.0115    0.0007    0.0000    0.0000
  0.0000    0.0000    0.0011    0.0213    0.3218    2.8402   18.8171   68.1203   78.2007   81.5514
 67.7237   18.2370    2.8394    0.3102    0.0205    0.0011    0.0000    0.0000
  0.0000    0.0001    0.0021    0.0420    0.5822    4.8823   27.9988   88.6793   95.5569  102.7763
 87.2788   27.1388    4.7225    0.5418    0.0404    0.0018    0.0001    0.0000
  0.0000    0.0002    0.0055    0.0880    0.8244    7.0487   36.2853   98.5134  107.8716  111.1819
 98.0672   35.1291    6.7883    0.7843    0.0655    0.0053    0.0002    0.0000
  0.0000    0.0004    0.0058    0.0713    1.0342    8.2258   40.5492   96.7274  107.8741  111.8488
 95.2891   39.2459    7.9339    0.9884    0.0888    0.0058    0.0004    0.0000
  0.0000    0.0008    0.0054    0.0818    1.0242    8.5447   41.2184   93.0843  104.4147  107.8223
 91.7764   39.8280    8.2431    0.9889    0.0786    0.0052    0.0005    0.0000
  0.0000    0.0005    0.0061    0.0800    0.9750    8.8358   38.8037   87.5190   97.2005  100.8804
 85.0282   37.3219    8.3288    0.9395    0.0887    0.0058    0.0008    0.0000
  0.0000    0.0007    0.0342    0.2174    1.0084    7.8118   33.3837   78.7304   86.7878   88.4085
 76.1234   32.3359    7.5384    0.9899    0.2085    0.0328    0.0007    0.0000
  0.0000    0.0005    0.0203    0.2085    1.2893    5.9819   24.9873   60.6381   69.8815   71.2359
 59.7552   24.2249    5.7834    1.2448    0.2019    0.0186    0.0005    0.0000
  0.0000    0.0004    0.0119    0.1277    0.9488    4.5305   13.4889   40.8857   44.1228   47.4710
 39.9757   13.0822    4.3724    0.9139    0.1231    0.0115    0.0004    0.0000
  0.0000    0.0003    0.0084    0.0804    0.4837    2.0257    6.8444   17.1507   18.3899   19.2885
 15.7992    6.8353    1.9846    0.4867    0.0582    0.0052    0.0003    0.0000
  0.0000    0.0002    0.0019    0.0208    0.1894    0.8019    2.2880    5.5308    6.0385    6.3020
  5.4345    2.1880    0.5809    0.1834    0.0201    0.0018    0.0002    0.0000
  0.0000    0.0001    0.0007    0.0077    0.0805    0.1888    0.7283    1.7243    1.8926    1.9850
  1.6958    0.7030    0.1830    0.0584    0.0074    0.0008    0.0001    0.0000
  0.0000    0.0000    0.0002    0.0020    0.0183    0.0483    0.1888    0.4885    0.5141    0.5327
  0.4807    0.1828    0.0438    0.0177    0.0018    0.0002    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0004    0.0039    0.0088    0.0348    0.0818    0.0930    0.0953
  0.0802    0.0338    0.0085    0.0038    0.0004    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0001    0.0002    0.0008    0.0043    0.0281    0.0280    0.0289
  0.0288    0.0042    0.0008    0.0002    0.0001    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION
NUMBER OF TIME STEPS =      1

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    5    5    5    5    0    0    0    0    0    0    0
    0    0    0    0    0    0    2  119  115  125  115    2    0    0    0    0    0    0
    0    0    0    0    0    0   24  102   93  101   98   23    0    0    0    0    0    0
    0    0    0    0    0    0   17   54   66   73   52   16    0    0    0    0    0    0
    0    0    0    0    0    0    1    6   10   11    7    1    0    0    0    0    0    0
    0    0    0    0    0    0    0    1    1    1    1    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    1    1    1    1    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    2    3    3    2    0    0    0    0    0    0    0
    0    0    0    0    0    0    2    7    7    7    7    1    0    0    0    0    0    0
    0    0    0    0    0    1    4   18   21   22   18    4    1    0    0    0    0    0
    0    0    0    0    0    1    9   42   44   47   40    9    1    0    0    0    0    0
    0    0    0    0    0    3   19   69   78   82   66   18    3    0    0    0    0    0
    0    0    0    0    1    5   28   89  100  103   87   27    5    1    0    0    0    0
    0    0    0    0    1    7   36   97  108  111   95   35    7    1    0    0    0    0
    0    0    0    0    1    8   41   97  106  112   95   39    8    1    0    0    0    0
    0    0    0    0    1    9   41   93  104  108   92   40    8    1    0    0    0    0
    0    0    0    0    1    9   39   88   97  101   85   37    8    1    0    0    0    0
    0    0    0    0    1    8   33   77   87   88   76   32    8    1    0    0    0    0
    0    0    0    0    1    6   25   61   70   71   60   24    6    1    0    0    0    0
    0    0    0    0    1    5   13   41   44   47   40   13    4    1    0    0    0    0
    0    0    0    0    0    2    7   17   18   19   17    7    2    0    0    0    0    0
    0    0    0    0    0    1    2    6    6    6    5    2    1    0    0    0    0    0
    0    0    0    0    0    0    1    2    2    2    2    1    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    1    1    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0




N =     3
NUMBER OF ITERATIONS =     1
```

```
HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :        3
        TIME(SECONDS) :  3.09000E+08
        TIME(DAYS)    :  3.57639E+03
        TIME(YEARS)   :  9.79162E+00

  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000  0.0000000
  0.0000000 46.5999996 46.5999996 46.5999995 46.5999995 46.5999995 46.5999996 46.5999997 46.5999997 46.5999997
 46.5999997 46.5999996 46.5999995 46.5999995 46.5999995 46.5999996 46.5999996  0.0000000
  0.0000000 45.9000000 45.8493884 45.8055488 45.7871048 45.7942726 45.8480511 46.0124418 46.0525242 46.0525242
 46.0124417 45.8480511 45.7942726 45.7871048 45.8055488 45.8493884 45.9000000  0.0000000
  0.0000000 45.2999998 45.0874449 44.9841363 44.9415614 44.9368277 44.9710976 45.0373195 45.0703417 45.0703417
 45.0373195 44.9710976 44.9368277 44.9415614 44.9841363 45.0874449 45.2999998  0.0000000
  0.0000000 44.4999995 44.2115236 44.0957926 44.0502697 44.0411051 44.0558957 44.0835406 44.1011400 44.1011400
 44.0835406 44.0558957 44.0411051 44.0502697 44.0957926 44.2115236 44.4999995  0.0000000
  0.0000000 43.1999999 43.1848117 43.1418915 43.1278395 43.1249397 43.1320957 43.1442300 43.1527215 43.1527215
 43.1442300 43.1320957 43.1249397 43.1278395 43.1418915 43.1848117 43.1999999  0.0000000
  0.0000000 41.8000008 42.1184543 42.1941383 42.2104680 42.2147007 42.2189594 42.2243747 42.2281226 42.2281226
 42.2243747 42.2189594 42.2147007 42.2104680 42.1941383 42.1184543 41.8000008  0.0000000
  0.0000000 41.3999997 41.3138686 41.3054925 41.3047723 41.3040414 41.3041915 41.3054072 41.3084414 41.3084414
 41.3054072 41.3041915 41.3040414 41.3047723 41.3054925 41.3138686 41.3999997  0.0000000
  0.0000000 40.4999998 40.4242616 40.4006841 40.3897085 40.3828395 40.3786139 40.3785044 40.3758916 40.3758916
 40.3785044 40.3786139 40.3828395 40.3897085 40.4006841 40.4242616 40.4999998  0.0000000
  0.0000000 39.4000003 39.4857797 39.4865750 39.4738386 39.4618866 39.4537344 39.4489276 39.4487649 39.4487649
 39.4489276 39.4537344 39.4618866 39.4738386 39.4865750 39.4857797 39.4000003  0.0000000
  0.0000000 38.7000000 38.6325656 38.5859787 38.5557415 38.5384486 38.5244865 38.5178046 38.5144811 38.5144811
 38.5178046 38.5244865 38.5384486 38.5557415 38.5859787 38.6325656 38.7000000  0.0000000
  0.0000000 37.8999995 37.7525624 37.6611541 37.6183706 37.5948920 37.5812288 37.5735491 37.5700967 37.5700967
 37.5735491 37.5812288 37.5948920 37.6183706 37.6611541 37.7525624 37.8999995  0.0000000
  0.0000000 36.7000002 36.7174306 36.6897296 36.6637995 36.6456320 36.6340788 36.6273863 36.6243473 36.6243473
 36.6273863 36.6340788 36.6456320 36.6637995 36.6897296 36.7174306 36.7000002  0.0000000
  0.0000000 35.7000001 35.7332339 35.7235861 35.7089591 35.6974566 35.6898650 35.6854449 35.6834469 35.6834469
 35.6854449 35.6898650 35.6974566 35.7089591 35.7235861 35.7332339 35.7000001  0.0000000

  0.0000000 34.8999997 34.7894918 34.7599050 34.7487651 34.7434027 34.7408898 34.7394119 34.7389266 34.7389266
 34.7394119 34.7408898 34.7434027 34.7487651 34.7599050 34.7894918 34.8999997  0.0000000
  0.0000000 33.7000002 33.7654483 33.7788982 33.7842523 33.7884374 33.7920123 33.7946465 33.7960387 33.7960387
 33.7946465 33.7920123 33.7884374 33.7842523 33.7788982 33.7654483 33.7000002  0.0000000
  0.0000000 32.7999999 32.7955704 32.8089262 32.8243087 32.8378072 32.8482257 32.8552142 32.8587051 32.8587051
 32.8552142 32.8482257 32.8378072 32.8243087 32.8089262 32.7955704 32.7999999  0.0000000
  0.0000000 31.7999999 31.8087585 31.8380916 31.8658895 31.8902801 31.9081632 31.9197414 31.9254039 31.9254039
 31.9197414 31.9081632 31.8902801 31.8658895 31.8380916 31.8087585 31.7999999  0.0000000
  0.0000000 30.7000001 30.7974430 30.8857625 30.9164836 30.9532633 30.9786850 30.9945877 31.0022431 31.0022431
 30.9945877 30.9786850 30.9532633 30.9164836 30.8857625 30.7974430 30.7000001  0.0000000
  0.0000000 29.7000000 29.8181951 29.9164282 29.9850281 30.0320442 30.0633087 30.0824736 30.0915805 30.0915805
 30.0824736 30.0633087 30.0320442 29.9850281 29.9164282 29.8181951 29.7000000  0.0000000
  0.0000000 28.8000004 28.8656385 28.9997099 29.0787524 29.1314894 29.1651152 29.1855466 29.1952109 29.1952109
 29.1855466 29.1651152 29.1314894 29.0787524 28.9997099 28.8656385 28.8000004  0.0000000
  0.0000000 27.9000001 28.0426553 28.1370931 28.2030476 28.2492507 28.2804700 28.2996989 28.3088439 28.3088439
 28.2996989 28.2804700 28.2492507 28.2030476 28.1370931 28.0426553 27.9000001  0.0000000
  0.0000000 27.2999998 27.2824910 27.2958904 27.3383702 27.3740180 27.3998805 27.4157198 27.4233652 27.4233652
 27.4157198 27.3998805 27.3740180 27.3383702 27.2958904 27.2824910 27.2999998  0.0000000
  0.0000000 26.3999999 26.4083705 26.4422954 26.4765783 26.5044982 26.5238921 26.5358388 26.5407970 26.5407970
 26.5358388 26.5238921 26.5044982 26.4765783 26.4422955 26.4083705 26.3999999  0.0000000
  0.0000000 25.4000003 25.5356707 25.5905968 25.6242818 25.6483656 25.6669258 25.6842904 25.6859018 25.6859018
 25.6842904 25.6669258 25.6483656 25.6242818 25.5905968 25.5356707 25.4000003  0.0000000
 0.0000000  24.7999997  24.7413926  24.7587228  24.7819919  24.7980571  24.7988954  24.7943718  24.7989414  24.7989414
24.7943718  24.7988954  24.7980571  24.7819919  24.7587228  24.7413926  24.7999997   0.0000000
 0.0000000  23.8000000  23.8703026  23.9197635  23.9475976  23.9553106  23.9444881  23.9218488  23.9069325  23.9069325
23.9218488  23.9444881  23.9553106  23.9475976  23.9197635  23.8703026  23.8000000   0.0000000
 0.0000000  22.8000004  23.0247908  23.1082788  23.1391157  23.1284877  23.1076414  23.0448729  23.0135409  23.0135409
23.0448729  23.1076414  23.1284877  23.1391157  23.1082788  23.0247908  22.8000004   0.0000000
 0.0000000  22.2999999  22.3190131  22.3481804  22.3608439  22.3508879  22.2985258  22.1328708  22.0824847  22.0824847
22.1328708  22.2985258  22.3508879  22.3608439  22.3481804  22.3190131  22.2999999   0.0000000
 0.0000000  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000003  21.8000003  21.8000003
21.8000003  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004  21.8000004   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000
 0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000   0.0000000


HEAD DISTRIBUTION - ROW
NUMBER OF TIME STEPS :      3
      TIME(SECONDS) :  3.09000E+08
      TIME(DAYS)    :  3.57639E+03
      TIME(YEARS)   :  9.79162E+00

  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  0  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47  47   0
  0  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46  46   0
  0  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45  45   0
  0  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44  44   0
  0  43  43  42  43  43  43  43  43  43  43  43  43  43  43  43  43   0
  0  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42  42   0
  0  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41  41   0
  0  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40  40   0
  0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
  0  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39  39   0
  0  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38  38   0
  0  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37  37   0
  0  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36  36   0
  0  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35  35   0
  0  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34  34   0
  0  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33  33   0
  0  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32  32   0
  0  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31  31   0
  0  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30  30   0
  0  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29  29   0
  0  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28  28   0
  0  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27  27   0
  0  26  26  26  26  27  27  27  27  27  27  27  27  26  26  26  26   0
  0  26  26  26  26  26  26  26  26  26  26  26  26  26  26  26  26   0
  0  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25  25   0
  0  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24  24   0
  0  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23  23   0

  0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
  0  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22  22   0
  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
```

```
DRAWDOWN
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0     0
```

```
AQUIFER THICKNESS
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  25.1  25.2  25.2  25.1  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.8  24.7  24.8  24.8  24.7  24.7  24.8  24.8  24.7  24.7  24.6  24.6  24.7  24.8  25.0   0.0
   0.0  25.0  24.7  24.6  24.6  24.5  24.6  24.6  24.6  24.6  24.6  24.6  24.5  24.6  24.6  24.7  25.0   0.0
   0.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  25.0  25.0  24.9  24.9  24.9  24.9  24.9  25.0  25.0   0.0
   0.0  25.0  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  24.9  24.8  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  24.9  25.0   0.0
   0.0  25.0  24.8  24.7  24.6  24.6  24.5  24.6  24.6  24.6  24.6  24.6  24.6  24.6  24.7  24.8  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  24.9  24.9  24.9  24.9  24.9  24.9  24.9  24.9  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  24.9  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.8  24.9  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.3  25.4  25.5  25.5  25.5  25.6  25.6  25.6  25.6  25.6  25.5  25.5  25.4  25.3  25.0   0.0
   0.0  25.0  25.1  25.2  25.3  25.3  25.4  25.4  25.4  25.4  25.4  25.4  25.3  25.3  25.2  25.1  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.1  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.1  25.0   0.0
   0.0  25.0  24.9  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  24.9  25.0   0.0
   0.0  25.0  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.1  25.1  25.1  25.2  25.1  25.1  25.1  25.0   0.0
   0.0  25.0  25.2  25.3  25.3  25.3  25.3  25.2  25.2  25.2  25.2  25.3  25.3  25.3  25.3  25.2  25.0   0.0
   0.0  25.0  25.0  25.0  25.1  25.1  25.0  24.8  24.8  24.8  24.8  25.0  25.1  25.1  25.0  25.0  25.0   0.0
   0.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0  25.0   0.0
   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0
```

```
TRANSMISSIVITY
    0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.14 0.00
    0.00 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.15 0.14 0.14 0.14 0.00
    0.00 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.14 0.00
    0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
   CUMULATIVE MASS BALANCE -- (IN FT**3)

    RECHARGE                   :  0.00000E+00
    INJECTION                  : -5.47343E+07
    PUMPAGE                    :  5.47343E+07
    CUMULATIVE  NET  PUMPAGE   :  0.00000E+00
    WATER RELEASE FROM STORAGE : -1.80201E+03
    LEAKAGE INTO AQUIFER       : -9.80974E+06
    LEAKAGE OUT OF AQUIFER     :  9.80999E+06
    CUMULATIVE  NET  LEAKAGE   :  2.53440E+04

         MASS BALANCE RESIDUAL  : -2.71380E+04
         ERROR  (AS PERCENT)    : -2.62001E-03

   RATE MASS BALANCE -- (IN C.F.S.)

    RECHARGE                    :  0.00000E+00
    LEAKAGE INTO AQUIFER        :  3.07426E+00
    LEAKAGE OUT OF AQUIFER      : -3.07423E+00
    NET LEAKAGE     (QNET)      : -2.38419E-07
    INJECTION                   : -2.89600E-01
    PUMPAGE                     :  2.89600E-01
    NET WITHDRAWAL    (TPUM)    :  0.00000E+00


CONCENTRATION

NUMBER OF TIME STEPS :      3
      DELTA T          :  3.20000E+07
      TIME(SECONDS)    :  3.08000E+08
  CHEM.TIME(SECONDS)   :  3.08998E+08
  CHEM.TIME(DAYS)      :  3.57638E+03
      TIME(YEARS)      :  9.79162E+00
  CHEM.TIME(YEARS)     :  9.79155E+00
 NO. MOVES COMPLETED   :      9

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0000    -0.0006    -0.0595     7.3814     7.1304     7.7639

     7.0713    -0.0571    -0.0006     0.0000     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0001    -0.0119     0.7201   128.8475   119.0110   129.7888

   123.8722     0.8828    -0.0114     0.0001     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0000     0.0005    -0.0182     2.0015   106.5514   106.8223   116.4046

   102.3158     1.8265    -0.0158     0.0004     0.0000     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0001     0.0050     0.3495    44.8137   104.1140    89.6665    97.4294

   100.0888    43.1827     0.3362     0.0048     0.0001     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0005     0.0311     1.3159    35.7598    96.5934    89.3219   106.8988

    83.2689    35.3779     1.2682     0.0298     0.0005     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0009     0.0525     1.9415    45.7340   100.8486    99.8895   106.9661

    97.5832    44.0081     1.8886     0.0505     0.0009     0.0000     0.0000     0.0000

     0.0000     0.0000     0.0000     0.0017     0.0726     2.2196    35.7865    95.1012    96.7236   103.2814

    92.1268    34.4523     2.1360     0.0700     0.0016     0.0000     0.0000     0.0000
  0.0000    0.0000    0.0000    0.0023    0.0958    2.5157   35.8890   81.9227   91.2769   97.1970
 79.5470   34.5586    2.4208    0.0821    0.0022    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0018    0.0852    2.4364   30.8254   81.7410   83.5087   86.7670
 75.4082   29.5770    2.3444    0.0820    0.0018    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0010    0.0412    1.1750   19.4777   55.2862   61.7466   65.7472
 53.7817   18.7725    1.1316    0.0395    0.0009    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0001    0.0087    0.3363    4.5700   16.2782   19.2125   20.4615
 15.8588    4.5027    0.3240    0.0084    0.0001    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0018    0.0589    0.8539    2.8285    3.5406    3.7700
  2.7575    0.8238    0.0848    0.0017    0.0000    0.0000    0.0000    0.0000

  0.0000    0.0000    0.0000    0.0000    0.0005    0.0097    0.2048    0.8469    1.1273    1.1988
  0.8285    0.1978    0.0094    0.0005    0.0000    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0001    0.0012    0.0120    0.1015    0.4180    0.5073    0.5289
  0.4101    0.0885    0.0115    0.0011    0.0001    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0004    0.0048    0.0323    0.2448    0.8935    1.1217    1.1674
  0.8818    0.2381    0.0313    0.0048    0.0004    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0001    0.0013    0.0107    0.0939    0.6294    2.3288    2.8830    2.7457
  2.2775    0.6118    0.0908    0.0104    0.0013    0.0001    0.0000    0.0000
  0.0000    0.0000    0.0003    0.0050    0.0502    0.3094    1.7281    6.1871    7.4916    7.7873
  6.0764    1.8788    0.2995    0.0465    0.0049    0.0003    0.0000    0.0000
  0.0000    0.0001    0.0008    0.0279    0.1025    0.7611    4.1478   14.2427   17.0830   17.7625
 14.0453    4.0314    0.7386    0.0991    0.0280    0.0008    0.0001    0.0000
  0.0000    0.0002    0.0036    0.0190    0.2208    1.6828    8.9765   28.0496   33.1670   33.6834
 27.7757    6.7288    1.6285    0.2131    0.0182    0.0034    0.0002    0.0000
  0.0000    0.0003    0.0066    0.0412    0.4340    3.2289   16.2522   51.5807   60.0454   61.6349
 50.9375   15.6142    3.1256    0.4190    0.0388    0.0064    0.0003    0.0000
  0.0000    0.0007    0.0187    0.0799    0.7510    5.2574   25.3706   73.6489   84.9739   87.8500
 72.5706   24.6616    5.0861    0.7248    0.0770    0.0181    0.0006    0.0000
  0.0000    0.0013    0.0367    0.1369    1.1082    7.5956   34.0882   86.2640   99.8527  103.2184
 84.8986   33.1107    7.3436    1.0692    0.1319    0.0353    0.0013    0.0000
  0.0000    0.0023    0.0842    0.1906    1.4807    9.3965   39.4873   91.4236  105.2492  108.2165
 90.0701   38.3646    9.0823    1.4090    0.1837    0.0811    0.0023    0.0000
  0.0000    0.0029    0.0786    0.8980    1.8982   10.4471   42.0801   90.6659  103.5983  106.6130
 89.0611   40.8434   10.0932    1.8306    0.6732    0.0767    0.0028    0.0000
  0.0000    0.0022    0.0617    0.8026    3.4437   14.6871   39.6566   83.9580   96.4747   98.6977
 82.9631   38.4836   14.1751    3.3280    0.5814    0.0595    0.0021    0.0000
  0.0000    0.0024    0.0632    0.4717    2.8553   12.7891   33.0420   71.7419   83.4032   84.5800
 71.2112   32.1174   12.3436    2.4691    0.4550    0.0808    0.0024    0.0000
  0.0000    0.0039    0.0523    0.3219    2.0444    8.2000   26.3802   56.9773   67.1411   68.1771
 56.3500   25.6101    7.9228    1.9738    0.3104    0.0505    0.0039    0.0000
  0.0000    0.0019    0.0532    0.2208    1.1303    4.7427   14.4832   30.8936   34.5173   36.5616
 30.3346   14.0888    4.5821    1.0911    0.2129    0.0513    0.0019    0.0000
  0.0000    0.0016    0.0289    0.0743    0.5016    1.4289    6.1361   23.6280   23.8456   24.4547
 23.3066    5.8802    1.3604    0.4646    0.0716    0.0280    0.0018    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
  0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000    0.0000
```

```
CONCENTRATION

NUMBER OF TIME STEPS :      3

    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    7    7    8    7    0    0    0    0    0    0    0
    0    0    0    0    0    0    1  129  119  130  124    1    0    0    0    0    0    0
    0    0    0    0    0    0    2  107  107  116  102    2    0    0    0    0    0    0
    0    0    0    0    0    0   45  104   90   97  100   43    0    0    0    0    0    0
    0    0    0    0    0    1   37   97   99  107   93   35    1    0    0    0    0    0
    0    0    0    0    0    2   45  101  100  107   98   44    2    0    0    0    0    0
    0    0    0    0    0    2   36   95   97  103   92   34    2    0    0    0    0    0
    0    0    0    0    0    3   38   82   91   97   80   35    2    0    0    0    0    0
    0    0    0    0    0    2   31   82   84   88   78   30    2    0    0    0    0    0
    0    0    0    0    0    1   19   55   62   66   54   19    1    0    0    0    0    0
    0    0    0    0    0    0    5   16   19   20   15    5    0    0    0    0    0    0
    0    0    0    0    0    0    1    3    4    4    3    1    0    0    0    0    0    0
    0    0    0    0    0    0    0    1    1    1    1    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    1    1    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    1    1    1    1    0    0    0    0    0    0    0
    0    0    0    0    0    0    1    2    3    3    2    1    0    0    0    0    0    0
    0    0    0    0    0    0    2    6    7    8    6    2    0    0    0    0    0    0
    0    0    0    0    0    1    4   14   17   18   14    4    1    0    0    0    0    0
    0    0    0    0    0    2    9   28   33   34   28    9    2    0    0    0    0    0
    0    0    0    0    0    3   16   52   60   62   51   16    3    0    0    0    0    0
    0    0    0    0    1    5   25   74   85   88   73   25    5    1    0    0    0    0
    0    0    0    0    1    6   34   86  100  103   85   33    7    1    0    0    0    0
    0    0    0    0    1    8   39   91  105  108   90   38    9    1    0    0    0    0
    0    0    0    1    2   10   42   91  104  107   88   41   10    2    1    0    0    0
    0    0    0    1    3   15   40   84   98   99   83   38   14    3    1    0    0    0
    0    0    0    0    3   13   33   72   83   85   71   32   12    2    0    0    0    0
    0    0    0    0    2    8   28   57   67   68   56   28    8    2    0    0    0    0
    0    0    0    0    1    5   14   31   35   37   30   14    5    1    0    0    0    0
    0    0    0    0    1    1    8   24   24   24   23    8    1    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0

CHEMICAL MASS BALANCE

      MASS IN BOUNDARIES       :   0.00000E+00
      MASS OUT BOUNDARIES      :  -1.31214E+08
      MASS PUMPED IN           :   1.29991E+10
      MASS PUMPED OUT          :  -1.59498E+08
      INFLOW MINUS OUTFLOW     :   1.27084E+10
      INITIAL MASS STORED      :   0.00000E+00
      PRESENT MASS STORED      :   1.24331E+10
      CHANGE MASS STORED       :   1.24331E+10
    COMPARE RESIDUAL WITH NET FLUX AND MASS ACCUMULATION:
      MASS BALANCE RESIDUAL    :   2.75243E+08
      ERROR  (AS PERCENT)      :   2.11740E+00
```

```
BABYLON,LEVELB,CHLORIDE                                        00000000

     TIME VERSUS HEAD AND CONCENTRATION AT SELECTED OBSERVATION POINTS
              PUMPING PERIOD NO.     3


                TRANSIENT  SOLUTION


                      OBS.WELL NO.     X    Y              N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                           1           8    4

                                                           0        45.3           0.0           0.000
                                                           1        45.0         102.1           7.764
                                                           2        45.0         107.7           8.778
                                                           3        45.0         106.6           9.792
                      OBS.WELL NO.     X    Y              N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                           2          10   16

                                                           0.       33.7           0.0           0.000
                                                           1        33.8          81.6           7.764
                                                           2        33.8           9.7           8.778
                                                           3        33.8           1.2           9.792
                      OBS.WELL NO.     X    Y              N      HEAD (FT)    CONC.(MG/L)    TIME (YEARS)
                           3          10   26

                                                           0        24.8           0.0           0.000
                                                           1        24.8           6.3           7.764
                                                           2        24.8          56.6           8.778
                                                           3        24.8          88.7           9.792
MESSAGE SUMMARY: MESSAGE NUMBER - COUNT
                          208     511  OR OVER
```

APPENDIX VI

GRAPHICS FILE USAGE

GRAPHICS FILE USAGE

The graphics output dataset which is defined in the preprocessor was designed for easy use with graphics packages such as SAS and SAS/GRAPH. The modified Konikow Model uses the formats described in Appendix VII when writing the output data to the graphics file. Information can be displayed in the form of plots, and 2 dimensional and 3 dimensional contours.

To utilize SAS and SAS/GRAPH routines, the information in the graphics data set must be read by SAS and placed in a SAS data set. A program that performs this function is listed on page VI-3. The "DSN=" in row 7 should be the full name of the graphics data set. The "DSN=" in the next row needs to be the full name of the SAS data set. This program reads all data from the graphics data set and places it in the SAS data set in a format useable by SAS and SAS/GRAPH. Example SAS/GRAPH routines and the resulting plots are shown in Appendix VIII.

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.KONI.CNTL                                      (SAS      )

//L11236C JOB (?,LLM-SA-KONI),'KONI SAS',
//  TIME=(0,40),CLASS=A,
//  MSGCLASS=X,MSGLEVEL=(1,1),NOTIFY=*
/*PASSWORD ?
/*JOBPARM ROOM=L
//KONI EXEC SAS
//KONI DD DSN=U11834C.LONGIS23.GRAPH,DISP=OLD
//LIB  DD DSN=U11834C.LONGIS23.SAS,DISP=OLD,
//          UNIT=STORAGE,SPACE=(TRK,(50,50))
//SYSIN DD *
  DATA LIB.ALL;
    INFILE KONI;
    LIST;
    INPUT (INT N) (@2 2*4.) ;
    INPUT @1 TITLE $80;
    INPUT (NX NY NTIM NPMP ISOLV IHEAD FCON TP BTM
           XDEL YDEL PINT) (@2 9*4. 3*11.) ;
    INPUT (TOL NUMOBS NREC NCODES) (@2 9. 3*4.) ;
    OUTPUT;
    IF NUMOBS > 0 THEN
    DO NOBS = 1 TO NUMOBS;
      INPUT (INT N IXOBS IYOBS) (@2 4*4.);
      OUTPUT;
    END;
    IF NREC > 0 THEN
    DO WELLS = 1 TO NREC;
      INPUT (INT N IX IY REC CNRECH) (@2 4*4. 2*9.);
      OUTPUT;
    END;
    IF NCODES > 0 THEN
    DO CODE = 1 TO NCODES;
      INPUT (INT N ICODE FCTR1 FCTR2 FCTR3) (@2 3*4. 3*10.);
      OUTPUT;
    END;
    II=NX * NY;
    DO III = 1 TO II;
      INPUT (INT N I J) (@2 4*4.) /
            (BOT WT THCK TRANS PERM RECH NODEID VPRM) (@1 8*10.);
      OUTPUT;
    END;
    PUMP: DO;
      INPUT (INT N) (@2 2*4.);
      OUTPUT;
      IF INT > -1 THEN DO;
        INPUT (INT N) (@2 2*4.)
              (SUMT TIMD TIMY) (3*12.);
        OUTPUT;
        II=NX * NY;
        DO III = 1 TO II;
          INPUT (INT N I J) (@2 4*4.)
                (WT DD THCK TRANS CONC) (5*10.);
          OUTPUT;
        END;
        PUMPPER = INT;
        TIMESTEP = N;
        GO TO PUMP;
      END;
      ELSE DO;
        IF NUMOBS > 0 & IHEAD = 0 THEN
        DO IJ = 1 TO NUMOBS;
          DO III = 1 TO TIMESTEP;
            INPUT (INT N NOBS TIM) (@2 4*4.)
```

```
              (TMWL TMCN TMYR) (3*7.);
        OUTPUT;
      END;
    END;
    IF PUMPPER < NPMP THEN DO;
      PUT 'PUMP=' PUMPPER;
      INPUT (INT N NTIM NREC PINT) (@2 4*4. 11.);
      OUTPUT;
      IF NREC > 0 THEN
      DO WELLS = 1 TO NREC;
        INPUT (INT N IX IY) (@2 4*4.)
              (REC CNRECH) (2*9.);
        OUTPUT;
      END;
      GO TO PUMP;
    END;
  END;
END;
STOP;
DROP II III IJ PUMPPER TIMESTEP;
RUN;
```

APPENDIX VII

OUTPUT FORMATS FOR GRAPHICS FILE

OUTPUT FORMATS FOR GRAPHICS FILE

Card Image	Column	Format	Variable	Definition
1	2-5	I 4	INT	Pumping period.
	6-9	I 4	N	Time step. 0 for initial input.
2	1-80	10A8	TITLE	Description of Problem
3	2-5	I 4	NX	Number of columns.
	6-9	I 4	NY	Number of rows.
	10-13	I 4	NTIM	Maximum number of time steps.
	14-17	I 4	NPMP	Number of pumping periods.
	18-21	I 4	ISOLV	ADIP (ISOLV=0) or SIP (ISOLV=1) algorithm.
	22-25	I 4	IHEAD	Solute transport (IHEAD=0) or head only (IHEAD=1) simulation.
	26-29	I 4	FCON	Confined (FCON=0) or unconfined (FCON=1) aquifer.
	30-33	I 4	TP	Transmissivity (TP=0) or hydraulic conductivity (TP=1) input.
	34-37	I 4	BTM	Saturated thickness (BTM=0) or bottom elevation (BTM=1) input.
	38-48	F11.3	XDEL	Width of node in X direction in feet.
	49-59	F11.3	YDEL	Width of node in Y direction in feet.
	60-70	F11.3	PINT	Length of pumping period (years).

Card Image	Column	Format	Variable	Definition
4	2-10	F9.4	TOL	Convergence criteria.
	11-14	I 4	NUMOBS	Number of observation wells.
	15-18	I 4	NREC	Number of pumping/injection wells.
	19-22	I 4	NCODES	Number of node identification codes.

Data Set	Number of Card Images	Format	Variable	Definition
1	Value of NUMOBS	X1,4I4	INT,N, IXOBS,IYOBS	Pumping period, time step, X and Y coordinates of observation points. This data set is eliminated if NUMOBS=0.
2	Value of NREC	X1,4I4, 2E9.3	INT,N,IX, IY,REC,CNRECH	Pumping period, time step, X and Y coordinates of pumping (+) or injection (-) wells, rate in ft 3/s and if an injection well, the concentration of injected water. This data set is eliminated if NREC=0.
3	Value of NCODES	X1,3I4, 3E10.3	FCTR1,FCTR2 INT,N,ICODE	Instructions for using NODEID array. This data set is eliminated if NCODES=0.
4+	2*NX*NY	a. X1,4I4	INT,N,I,J	Pumping period, time step, X and Y coordinates.
		b. 3FIO.4, 3EIO.2, I10, E10.2	BOT,WT,THCK, TRANS,PERM, RECH,NODEID VPRM	Initial matrix data.

Data Set	Number of Card Images	Format	Variable	Definition
5++	1	X1,2I4	INT,N	Pumping period and time step. If INT>-1, then data set 6 is read. If INT=-1, then data sets 7 and 8 are read.
6	1+ (NX*NY)	a. X1,2I4, 3E12.5	INT,N, N,SUMT,TIMD, TIMY	Pumping period, time step, total elapsed time in seconds, elapsed time in days, elapsed time in years.
		b. X1,414 3F10.4, E10.2, F10.4	INT,N,I,J WT,DD,THCK, TRANS, CONC	Pumping period, time step, X and Y coordinates for matrix data. Matrix values at end of time step.
7	N*NUMOBS	X1,4I4, 3F7.3	INT,N,NOBS, TIM, TMWC,TMCN, TMYR	Pumping period, time step, observation number, time step, head (ft), conc (MG/L), time (years). This data set is eliminated if NUMOBS=0.

Data Set	Number of Card Images	Format	Variable	Definition
8	a. 1	X1,4I4, F11.3	INT,N,NTIM, NREC,PINT	This data set is used only if NPMP>1. Appears for each pumping period greater than 1. Pumping period, time step, number of time steps for the pumping period, number of injection (-) or pumping (+) wells, NTIM,NREC and PINT all = -1 if same as last pumping period. Pumping period (years).
	b. Value of NREC	X1,4I4, 2E9.3	1NT,N,1X,1Y, REC,CNRECH	Pumping period, time step, X and Y coordinates of pumping (+) or injection (-) wells, rate in ft 3/s, and if an injection well, the concentration of injected water. This data set is eliminated if NREC=0.

+ End of initial data.

++ Beginning of results from time steps and pumping periods.

APPENDIX VIII

SAMPLE SAS/GRAPH ROUTINES AND RESULTS

INTRODUCTION

The following SAS routines were designed to utilize the SAS data sets created from the computer simulation runs of the modified Konikov model. These programs use SAS Macro language commands as described in the 1982 edition of the SAS User's Guide. Individual routines are described under MACROS.SAS. The MACCALLS.SAS file includes combinations of commands stored in MACROS.SAS in order to produce specific types of graphics.

Example Problem Three (page 5-3) is used in the following descriptions of the SAS macros.

MACCALLS.SAS

Selected Macro routines are contained in the file MACROS.SAS. These routines execute SAS graphics routines that aid in interpreting the results from the modified Konikov simulation runs. These routines are described under MACROS.SAS, beginning on page VIII-3.

The Macro routines are called in the file MACCALLS.SAS. This is the routine that is executed under SAS. The option "MACRO" must be used when executing MACCALLS.SAS. Macro variables must be assigned values according to the graphics desired. The graphics device must be specified in the first line of the data set; in the example it is "TEK4010". The data set containing the macros (MACROS.SAS) must be allocated prior to execution with the file name indicated on the second line, "MACROS" in this example. The SAS data set must also be allocated before execution; in this example the file name is "LIB.ALL".

Several macros have been formed that execute other macros. This has been done so that all initialization and processing for individual plots or graphs may be performed by one macro call. The macros which are included in MACCALLS.SAS are described below. Listings of the sample input and their results are shown beginning on page VIII-9.

1. PLOTWLS selects the well locations for the observation and recharge wells from the data set and plots and them (see Example 1, pages VIII-9, 10).
2. G3DWLS selects the well locations for the observation and recharge wells from the data set, places them in a grid and plots the grid using G3D (see Example 2, pages VIII-9, 10).
3. CONT2 executes all macros necessary for a contour plot with color (see Example 3, pages VIII-11, 12 and Example 9, pages VIII-19, 21).
4. PLOT2 executes all macros necessary for a shaded contour plot of the data indicated (see Example 6, pages VIII-16, 18).
5. PLOT3 executes all macros necessary for a shaded contour plot after the range has already been set in a prior execution of RNGSORT (see Examples 7 and 8, pages VIII-16, 17, 18).
6. CONT3 executes all macros necessary for a contour plot with color after the range has already been set in a prior execution of RNGSORT (see Examples 10 and 11, pages VIII-19, 20, 21).
7. G3D1 executes all macros necessary for a 3 dimensional contour plot (see Examples 12, 13, 14, pages VIII-22, 23, 24).

MACROS.SAS

The SAS macro routines contained in this file are described below. A source listing of this file follows on page VIII-5.

1. CONTCOLR performs a standard GCONTOUR plot on the data in "PROCFL". Allows for color specification for the contour lines using "CCOLORS".
2. CONTUN performs a standard GCONTOUR plot on the data in "PROCFL". This does NOT allow for color specification.
3. FNDWLS selects the well locations for the observation and recharge/discharge wells from the file, "DATAFL". The recharge is set to -1, the discharge to +1, and the recharge for observation wells is set to 0.
4. G3DPLOT performs the G3D plot procedure on the data in "PROCFL".
5. MERGEFL performs a SAS merge on the file or files in "DATAFL". The resulting data is placed in the file named in "PROCFL". The data is merged by the variable or variables in "BYVAR".
6. PCKVAR stores the data indicated in "LVAR" and the appropriate X and Y coordinates.
7. PER selects the data for the time step and pumping period indicated from the file "SETFL" and places it on the file "DATAFL".
8. PLOT1 performs the GPLOT procedure on data in "PROCFL" (see Examples 4 and 5, pages VIII-14, 15).
9. REVAXIS negates all values for the variable indicated in "AXIS".
10. RNGSORT finds the maximum and minimum values for the variable indicated in "LVAR" in the file "SETFL". The number of contour levels is indicated in "LVLS". "LOW", "HI", and

"INTER" are global variables that are assigned values in RNGSORT and are used in the LEVELS parameter when contouring. The "LOW" and "HI" represent the lower and upper limits of coutouring and "INTER" represents the coutour interval.

11. SETMIN deletes all values of the variable in "LVAR" that are less than the minimum valid value indicated in "MINVAL".
12. SETWLS places the wells found in FNDWLS on a grid with the dimensions of the model area. This sets them up for plotting with G3DPLOT.
13. SHDSET uses the range found in RNGSORT to set up the data necessary for generating a shaded contour plot of the data.
14. SORTFL performs a SAS sort on the data in "DATAFL". The data is sorted by the variable or variables specified in "BYVAR".

SOURCE LISTING for MACROS.SAS

The 14 macros described above are listed below.

```
%MACRO CONTCOLR;
  PROC GCONTOUR DATA=&PROCFL;
    PLOT &VERT * &HORIZ = &LVAR/LEVELS = &LOW TO &HI BY &INTER
     CLEVELS = %CCOLORS ;
  RUN;
%MEND CONTCOLR;

%MACRO CONTUN;
  PROC GCONTOUR DATA=&PROCFL;
    PLOT &VERT * &HORIZ = &LVAR/LEVELS = &LOW TO &HI BY &INTER;
  RUN;
%MEND CONTUN;

%MACRO FNDWLS;
  DATA &PROCFL;
  SET &DATAFL;
    CALL SYMPUT ('NNX',NX);
    CALL SYMPUT ('NNY',NY);
    IF REC=. THEN DO;
      IX=IXOBS;
      IY=IYOBS;
```

```
        REC=0;
      END;
      IF REC<0 THEN REC=-1;
      IF REC>0 THEN REC=1;
      IF NOBS>0 & NOBS<=NUMOBS THEN OUTPUT;
      IF WELLS>0 & WELLS <=NREC THEN OUTPUT;
      KEEP IX IY REC;
    PROC SORT DATA=&PROCFL;
      BY IX IY;
  %MEND FNDWLS;

  %MACRO G3DPLT;
     PROC G3D DATA=&PROCFL;
        PLOT &HORIZ*&VERT=&LVAR;
  %MEND G3DPLT;

  %MACRO MERGEFL;
    DATA &PROCFL;
    MERGE &DATAFL;
      BY &BYVAR;
  %MEND MERGEFL;

  %MACRO PCKVAR;
    DATA &PROCFL;
    SET &DATAFL;
      KEEP &VERT &HORIZ &LVAR NX NY;
      OUTPUT;
    RUN;
  %MEND PCKVAR;

  %MACRO PER;
    DATA &DATAFL;
    SET &SETFL;
      IF N=&TIMESTEP & INT=&PUMPPER THEN DO;
        TIME=&TIMECT;
        OUTPUT;
      END;
    RUN;
  %MEND PER;

  %MACRO PLOT1;
    PROC GPLOT DATA=&PROCFL;
      PLOT &VERT * &HORIZ = &LVAR/
      %SETAX ;
      %SYMS
    RUN;
  %MEND PLOT1;

  %MACRO REVAXIS;
    DATA &PROCFL;
    SET &PROCFL;
      &AXIS = -&AXIS;
      OUTPUT;
    RUN;
```

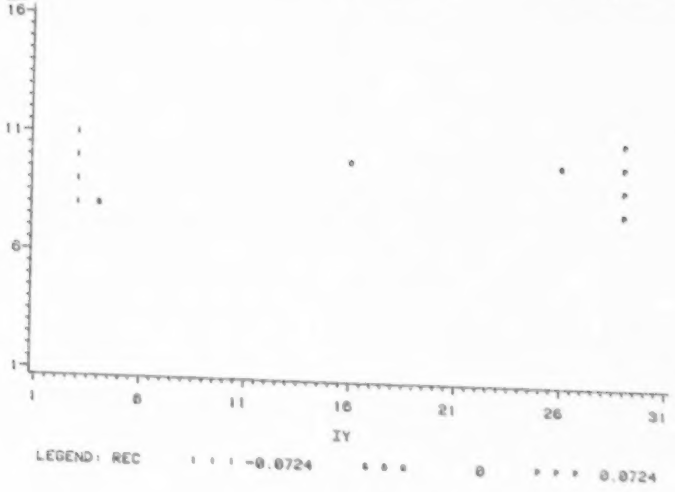
```
%MEND REVAXIS;

%MACRO RNGSORT;
  %GLOBAL LOW HI INTER;
  DATA BGLTL;
  SET &SETFL END=EOF;
    RETAIN BG DIFF 0.0;
    RETAIN LTL 99999.9;
    BG=MAX(BG,&LVAR);
    LTL=MIN(LTL,&LVAR);
    IF EOF THEN DO;
      DIFF=BG-LTL;
      DIFFL=DIFF/&LVLS;
      LT=LTL + (DIFFL/2);
      B =BG - (DIFFL/2);
      CALL SYMPUT('LOW',LT);
      CALL SYMPUT('HI',B);
      CALL SYMPUT('INTER',DIFFL);
      KEEP BG LTL DIFF DIFFL;
      OUTPUT;
    END;
  RUN;
%MEND RNGSORT;

%MACRO SETMIN;
  DATA &DATAFL;
  SET &SETFL;
    IF (&LVAR > &MINVAL) THEN OUTPUT;
%MEND SETMIN;

%MACRO SETWLS;
   %FNDWLS;
   DATA TMP1;
   SET &DATAFL;
     KEEP IX IY;
     IX=I;
     IY=J;
     IF (((I>1 | I<&NNX) & (J>1 | J<&NNY)) & (BOT~=.)) THEN OUTPUT;
   PROC SORT DATA=TMP1;
     BY IX IY;
   DATA &PROCFL;
     MERGE &PROCFL TMP1;
     BY IX IY;
       IF REC=. THEN RECH=0;
       ELSE IF REC=0 THEN RECH=2;
       ELSE IF REC<0 THEN RECH=3;
       ELSE               RECH=1;
       IY=-IY;
       OUTPUT;
%MEND SETWLS;

%MACRO SHDSET;
  %LOCAL CT;
  DATA RNG;
```

```
    INT=&PUMPPER;
    VAL1=&LOW;
    %DO CT=2 %TO &LVLS;
      VAL&CT=VAL1+(&INTER*&CT);
    %END;
    OUTPUT;
  DATA &DATAFL;
  MERGE RNG &DATAFL;
    BY INT;
  DATA &PROCFL;
  SET &DATAFL;
    KEEP &LVAR N INT I J NX NY;
    %IFELSE
    OUTPUT;
%MEND SHDSET;
%MACRO IFELSE;
  IF &LVAR<=VAL1 THEN &LVAR=VAL1;
  %DO X=2 %TO (&LVLS-1);
  ELSE IF &LVAR<=
  VAL&X THEN &LVAR=VAL&X;
  %END;
  ELSE &LVAR=VAL&LVLS;
%MEND IFELSE;

%MACRO SORTFL;
  PROC SORT DATA=&DATAFL;
    BY &BYVAR;
%MEND SORTFL;
```

```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.MACS.CNTL                                    (WELLS    )

GOPTIONS DEVICE=TEK4010;
 %INCLUDE MACROS;
 /*-------------------------------------------- EXAMPLE 1 ---------*/
 /*------------------- PLOT WELL LOCATIONS -------------------------*/
 /*  PLTWLS PULLS THE WELL LOCATIONS FOR THE OBSERVATION AND       */
 /*  RECHARGE WELLS FROM THE DATA SET AND PLOTS THEM.              */
 %MACRO PLTWLS;
   %PER
   %FNDWLS
   %PLOT1
 %MEND PLTWLS;
 %LET DATAFL=INIT  ;    /* INTERMEDIATE FILE */
 %LET SETFL=LIB.ALL;    /* SOURCE FILE */
 %LET PROCFL=WELLS ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET TIMESTEP=0   ;    /* TIME STEP TO BE PLOTTED */
 %LET PUMPPER=0    ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMECT=0     ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=IX      ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=IY     ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=REC     ;    /* VAR TO BE PLOTTED */
 %MACRO SETAX;
   VAXIS= 1 TO &NNX BY 5
   HAXIS=1 TO &NNY BY 5
 %MEND SETAX;
 %MACRO SYMS;
   SYMBOL1 V=I I=NONE C=RED;
   SYMBOL2 V=O I=NONE C=BLUE;
   SYMBOL3 V=P I=NONE C=GREEN;
 %MEND SYMS;
  TITLE .H=1 BABYLON LANDFILL SITE;
  TITLE2 GPLOT WELL LOCATIONS;
 %PLTWLS
 /*-------------------------------------------- EXAMPLE 2 ---------*/
 /*------------------- GRAPH WELL LOCATIONS ------------------------*/
 /*  G3DWLS PULLS THE WELL LOCATIONS FOR THE OBERVATION AND RECHARGE */
 /*  WELLS FROM THE DATA SET, PLACES THEM IN A GRID AND PLOTS THE    */
 /*  GRID USING G3D.                                                 */
 %MACRO G3DWLS;
   %PER
   %SETWLS
   %G3DPLT
 %MEND G3DWLS;
 %LET DATAFL=INIT  ;    /* INTERMEDIATE FILE */
 %LET SETFL=LIB.ALL;    /* SOURCE FILE */
 %LET PROCFL=WELLS ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET TIMESTEP=0   ;    /* TIME STEP TO BE PLOTTED */
 %LET PUMPPER=0    ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMECT=0     ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=IX      ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=IY     ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=RECH    ;    /* VAR TO BE PLOTTED */
  TITLE2 G3D WELL LOCATIONS;
 %G3DWLS
```

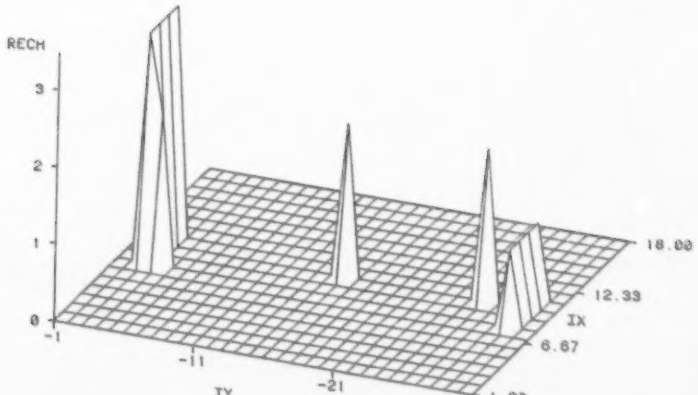
BABYLON LANDFILL SITE
GPLOT WELL LOCATIONS

Example 1



BABYLON LANDFILL SITE
G3D WELL LOCATIONS

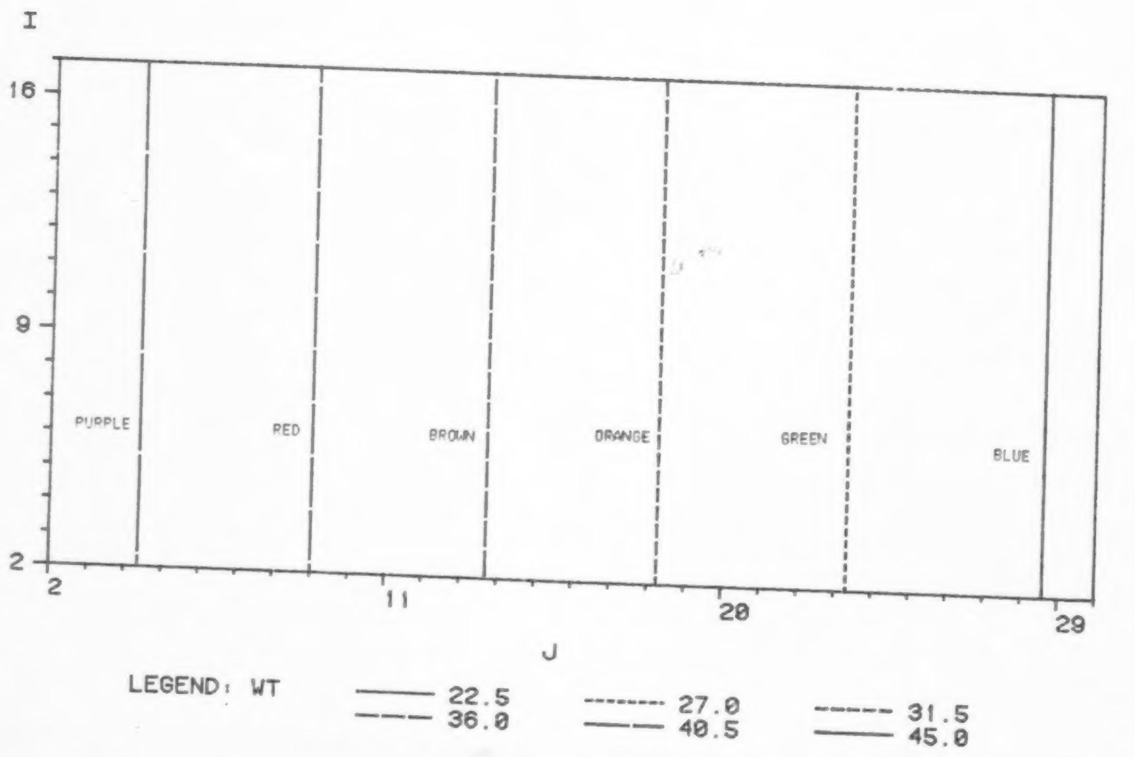
Example 2



```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.MACS.CNTL                                (HYDRO    )

GOPTIONS DEVICE=TEK4010;
 %INCLUDE MACROS;
 /*--------------------- SORT BY TIME STEP AND PUMP. PER -------------*/
 /*  PER PULLS THE DATA FOR THE TIME STEP AND PUMPING PERIOD          */
 /*  INDICATED FROM THE FILE "SETFL" AND PLACES IT ON THE FILE        */
 /*  "DATAFL".                                                        */
 %LET DATAFL=INIT  ;     /* CONTAINS DATA TO BE PLOTTED */
 %LET SETFL=LIB.ALL ;    /* INTERMEDIATE FILE */
 %LET PUMPPER=0    ;     /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=0   ;     /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=0     ;     /* TIME ELAPSED IN SIMULATION */
 %PER
 /*-------------------------------------------- EXAMPLE 3 ---------*/
 /*-------------------- GCONT WITH COLOR ----------------------------*/
 /*  CONT2 EXECUTES ALL MACROS NECESSARY FOR A CONTOUR PLOT          */
 /*  WITH COLOR.*/
 %MACRO CONT2;
   %SETMIN
   %RNGSORT
   %PCKVAR
   %CONTCOLR
 %MEND CONT2;
 %LET SETFL=INIT   ;     /* SOURCE FILE OF DATA */
 %LET DATAFL=INIT  ;     /* CONTAINS DATA TO BE PLOTTED */
 %LET PROCFL=HEAD  ;     /* CONTAINS DATA TO BE PLOTTED */
 %LET MINVAL=0.0   ;     /* MINIMUM VALID VALUE FOR LVAR */
 %LET VERT=I       ;     /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J      ;     /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=WT      ;     /* VAR TO BE PLOTTED */
 %LET LVLS=6       ;     /* # OF LEVELS TO BE CONTOURED */
 %MACRO CCOLORS;
   'BLUE' 'GREEN' 'ORANGE'
   'BROWN' 'RED' 'PURPLE'
 %MEND CCOLORS;
  TITLE .H=1 BABYLON LANDFILL SITE;
  TITLE2 GCONTOUR WATER TABLE;
 %CONT2
```

Example 3

BABYLON LANDFILL SITE
GCONTOUR WATER TABLE

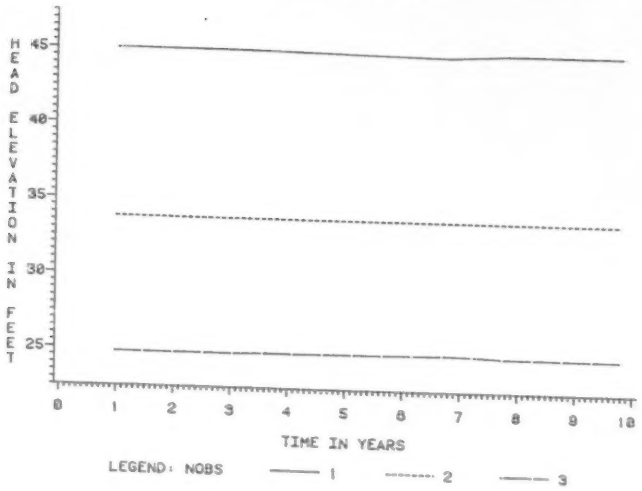


```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.MACS.CNTL                              (OBS     )

GOPTIONS DEVICE=TEK4010;
 %INCLUDE MACROS;
 /*-------------------- PULL TIME STEP AND PUMP. PER ----------------*/
 /*  PER PULLS THE DATA FOR THE TIME STEP AND PUMPING PERIOD          */
 /*  INDICATED FROM THE FILE "SETFL" AND PLACES IT ON THE FILE        */
 /*  "DATAFL".                                                        */
 %LET DATAFL=IN1   ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET SETFL=LIB.ALL ;   /* INTERMEDIATE FILE */
 %LET PUMPPER=1    ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=4   ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=3     ;    /* TIME ELAPSED IN SIMULATION */
 %PER
 /*-------------------- SORT BY VARIABLE ----------------------------*/
 /*  SORTFL SORTS THE FILE IN "DATAFL" BY THE VARIABLE IN "BYVAR".   */
 %LET DATAFL=IN1   ;    /* CONTAINS DATA TO BE SORTED*/
 %LET BYVAR=TMYR   ;    /* CONTAINS VARIABLE TO SORT ON */
 %SORTFL
 /*-------------------- PULL TIME STEP AND PUMP. PER ----------------*/
 /*  PER PULLS THE DATA FOR THE TIME STEP AND PUMPING PERIOD          */
 /*  INDICATED FROM THE FILE "SETFL" AND PLACES IT ON THE FILE        */
 /*  "DATAFL".                                                        */
 %LET DATAFL=IN2   ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET SETFL=LIB.ALL ;   /* INTERMEDIATE FILE */
 %LET PUMPPER=2    ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=2   ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=7     ;    /* TIME ELAPSED IN SIMULATION */
 %PER
 /*-------------------- SORT BY VARIABLE ----------------------------*/
 /*  SORTFL SORTS THE FILE IN "DATAFL" BY THE VARIABLE IN "BYVAR".   */
 %LET DATAFL=IN2   ;    /* CONTAINS DATA TO BE SORTED*/
 %LET BYVAR=TMYR   ;    /* CONTAINS VARIABLE TO SORT ON */
 %SORTFL
 /*-------------------- SORT BY TIME STEP AND PUMP. PER -------------*/
 /*  PER PULLS THE DATA FOR THE TIME STEP AND PUMPING PERIOD          */
 /*  INDICATED FROM THE FILE "SETFL" AND PLACES IT ON THE FILE        */
 /*  "DATAFL".                                                        */
 %LET DATAFL=IN3   ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET SETFL=LIB.ALL ;   /* INTERMEDIATE FILE */
 %LET PUMPPER=3    ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=4   ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=10    ;    /* TIME ELAPSED IN SIMULATION */
 %PER
 /*-------------------- SORT BY VARIABLE ----------------------------*/
 /*  SORTFL SORTS THE FILE IN "DATAFL" BY THE VARIABLE IN "BYVAR".   */
 %LET DATAFL=IN3   ;    /* CONTAINS DATA TO BE SORTED*/
 %LET BYVAR=TMYR   ;    /* CONTAINS VARIABLE TO SORT ON */
 %SORTFL
 /*-------------------- MERGE FILES ---------------------------------*/
 /*  MERGEFL MERGES THE FILES INDICATED IN "DATAFL" INTO THE FILE    */
 /*  IN "PROCFL", SORTING BY THE VARIABLE IN "BYVAR".                 */
 %LET PROCFL=HYDRO ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET DATAFL=IN1 IN2 IN3; /* SOURCE FILE OF DATA */
 %LET BYVAR=TMYR   ;    /* VAR TO SORT BY */
 %MERGEFL
 /*-------------------- SET CONTOUR RANGE ---------------------------*/
 /*  PCKVAR KEEPS THE DATA INDICATED IN "LVAR" AND THE APPROPRIATE X */
 /*  AND Y COORDINATES.                                               */
 %LET PROCFL=HYDRO ;    /* CONTAINS DATA TO BE PLOTTED */
 %LET SETFL=HYDRO  ;    /* SOURCE FILE OF DATA */
 %LET VERT=TMWL TMCN;   /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=TMYR   ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=NOBS    ;    /* VAR TO BE PLOTTED */
```

```
%PCKVAR
/*---------------------------------------------- EXAMPLE 4 ---------*/
/*-------------------- GPLOT WITH LINES OR SYMBOLS -----------------*/
/*  PLOT1 PERFORMS THE GPLOT PROCEDURE ON DATA IN "PROCFL".         */
%LET PROCFL=HYDRO :    /* CONTAINS DATA TO BE PLOTTED */
%LET VERT=TMWL    :    /* VERTICAL AXIS FOR PLOT */
%LET HORIZ=TMYR   :    /* HORIZONTAL AXIS FOR PLOT */
%LET LVAR=NOBS    :    /* VAR TO BE PLOTTED */
%MACRO SETAX;
%MEND SETAX;
%MACRO SYMS;
 SYMBOL1 L=1 I=JOIN V=NONE C=RED;
 SYMBOL2 L=2 I=JOIN V=NONE C=BLUE;
 SYMBOL3 L=5 I=JOIN V=NONE C=GREEN;
%MEND SYMS;
 TITLE2 GPLOT HYDROGRAPH (HEAD);
%PLOT1
/*---------------------------------------------- EXAMPLE 5 ---------*/
/*-------------------- GPLOT WITH LINES OR SYMBOLS -----------------*/
/*  PLOT1 PERFORMS THE GPLOT PROCEDURE ON DATA IN "PROCFL".         */
%LET PROCFL=HYDRO :    /* CONTAINS DATA TO BE PLOTTED */
%LET VERT=TMCN    :    /* VERTICAL AXIS FOR PLOT */
%LET HORIZ=TMYR   :    /* HORIZONTAL AXIS FOR PLOT */
%LET LVAR=NOBS    :    /* VAR TO BE PLOTTED */
%MACRO SETAX;
%MEND SETAX;
%MACRO SYMS;
 SYMBOL1 L=1 I=JOIN V=NONE C=RED;
 SYMBOL2 L=2 I=JOIN V=NONE C=BLUE;
 SYMBOL3 L=5 I=JOIN V=NONE C=GREEN;
%MEND SYMS;
 TITLE2 GPLOT HYDROGRAPH (CONCENTRATION);
%PLOT1
```

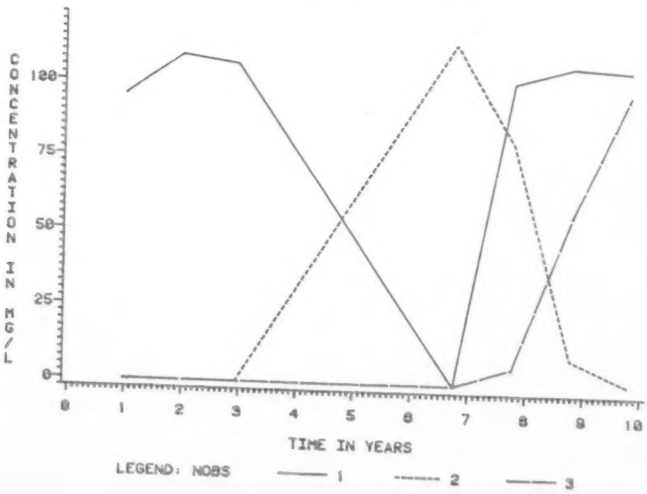
Example 4

BABYLON LANDFILL SITE
GPLOT HYDROGRAPH (HEAD)



Example 5

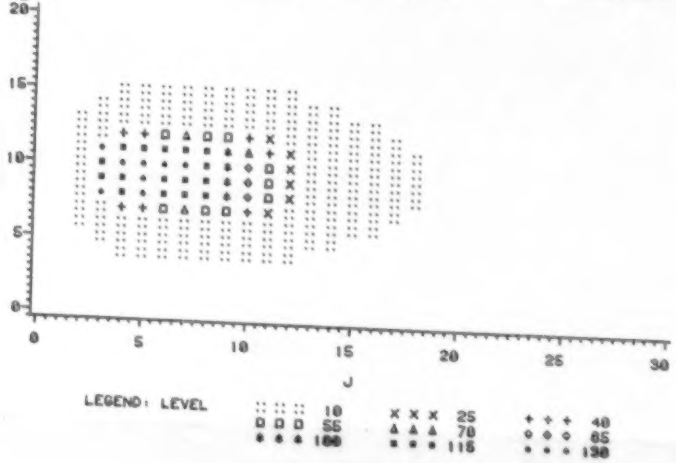
BABYLON LANDFILL SITE
GPLOT HYDROGRAPH (CONCENTRATION)



```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.MACS.CNTL                                            (SHADE    )

GOPTIONS DEVICE=TEK4010;
 %INCLUDE MACROS;
 /*-------------------- SORT OUT MINIMUM VALID VALUE FOR VAR --------*/
 /*  SETMIN SORTS OUT THE MINIMUM VALID VALUE FOR THE VARIABLE        */
 /*  INDICATED IN LVAR.                                               */
 %LET SETFL=LIB.ALL;    /* SOURCE FILE OF DATA */
 %LET DATAFL=SHD   ;    /* INTERMEDIATE FILE */
 %LET LVAR=CONC     ;   /* VAR TO BE PLOTTED */
 %LET MINVAL=0.0    ;   /* MINIMUM VALUE FOR LVAR */
 %SETMIN
 /*-------------------------------------------- EXAMPLE 6 ---------*/
 /*-------------------- FIND RANGE, SET LEVELS, PLOT (LINES,SYMBOLS)-*/
 /*  PLOT2 EXECUTES ALL MACROS NECESSARY FOR A SHADED CONTOUR PLOT    */
 /*  OF THE DATA INDICATED.                                           */
 %MACRO PLOT2;
   %RNGSORT
   %PER
   %SHDSET
   %PLOT1
 %MEND PLOT2;
 %LET SETFL=SHD     ;    /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME1;     /* CONTAINS DATA TO BE PLOTTED */
 %LET LVAR=CONC     ;    /* VAR TO BE PLOTTED */
 %LET PUMPPER=1     ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=3    ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=3      ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J       ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVLS=9        ;    /* # OF LEVELS TO BE PLOTTED */
 %MACRO SETAX;
   VAXIS= 0 TO 20 BY 5
   HAXIS= 0 TO 30 BY 5
 %MEND SETAX;
 %MACRO SYMS ;           /* # OF SYMBOLS = # OF LVLS (ABOVE) */
   SYMBOL1 V=PAW      I=NONE C=BLUE;
   SYMBOL2 V=X        I=NONE C=BLUE;
   SYMBOL3 V=PLUS     I=NONE C=GREEN;
   SYMBOL4 V=SQUARE   I=NONE C=GREEN;
   SYMBOL5 V=TRIANGLE I=NONE C=ORANGE;
   SYMBOL6 V=DIAMOND  I=NONE C=ORANGE;
   SYMBOL7 V=STAR     I=NONE C=BROWN;
   SYMBOL8 V=_        I=NONE C=RED;
   SYMBOL9 V=%        I=NONE C=PURPLE;
 %MEND SYMS;
   TITLE .H=1 BABYLON LANDFILL SITE;
   TITLE2 GPLOT CONCENTRATION;
   TITLE3 END OF PUMPING PERIOD 1;
 %PLOT2
 /*-------------------------------------------- EXAMPLE 7 ---------*/
 /*-------------------- PLOT (LINES, SYMBOLS) AFTER RANGE -----------*/
 /*  PLOT3 EXECUTES ALL MACROS NECESSARY FOR A SHADED CONTOUR PLOT    */
 /*  OF THE DATA INDICATED AFTER THE THE RANGE HAS ALREADY BEEN SET.  */
 %MACRO PLOT3;
   %PER
   %SHDSET
   %PLOT1
 %MEND PLOT3;
 %LET SETFL=SHD     ;    /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME2;     /* CONTAINS DATA TO BE PLOTTED */
 %LET LVAR=CONC     ;    /* VAR TO BE PLOTTED */
 %LET PUMPPER=2     :    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=1    :    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=7      :    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        :    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J       :    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVLS=9        :    /* # OF LEVELS TO BE PLOTTED */
 %MACRO SETAX;
   VAXIS= O TO 20 BY 5
   HAXIS= O TO 30 BY 5
 %MEND SETAX;
 %MACRO SYMS ;           /* # OF SYMBOLS = # OF LVLS (ABOVE) */
   SYMBOL1 V=PAW       I=NONE C=BLUE;
   SYMBOL2 V=X         I=NONE C=BLUE;
   SYMBOL3 V=PLUS      I=NONE C=GREEN;
   SYMBOL4 V=SQUARE    I=NONE C=GREEN;
   SYMBOL5 V=TRIANGLE I=NONE C=ORANGE;
   SYMBOL6 V=DIAMOND  I=NONE C=ORANGE;
   SYMBOL7 V=STAR      I=NONE C=BROWN;
   SYMBOL8 V=_         I=NONE C=RED;
   SYMBOL9 V=%         I=NONE C=PURPLE;
%MEND SYMS;
  TITLE3 END OF PUMPING PERIOD 2;
%PLOT3
/*-------------------------------------------- EXAMPLE 8 ---------*/
/*------------------- PLOT (LINES, SYMBOLS) AFTER RANGE -----------*/
/*  PLOT3 EXECUTES ALL MACROS NECESSARY FOR A SHADED CONTOUR PLOT   */
/*  OF THE DATA INDICATED AFTER THE THE RANGE HAS ALREADY BEEN SET. */
%MACRO PLOT3;
  %PER
  %SHDSET
  %PLOT1
%MEND PLOT3;
%LET SETFL=SHD      :    /* SOURCE FILE OF DATA */
%LET DATAFL=PLUMES:      /* INTERMEDIATE FILE */
%LET PROCFL=PLUME3;      /* CONTAINS DATA TO BE PLOTTED */
%LET LVAR=CONC      :    /* VAR TO BE PLOTTED */
%LET PUMPPER=3      :    /* PUMP PERIOD TO BE PLOTTED */
%LET TIMESTEP=3     :    /* TIME STEP DATA TO BE PLOTTED */
%LET TIMECT=10      :    /* TIME ELAPSED IN SIMULATION */
%LET VERT=I         :    /* VERTICAL AXIS FOR PLOT */
%LET HORIZ=J        :    /* HORIZONTAL AXIS FOR PLOT */
%LET LVLS=9         :    /* # OF LEVELS TO BE PLOTTED */
%MACRO SETAX;
  VAXIS= O TO 20 BY 5
  HAXIS= O TO 30 BY 5
%MEND SETAX;
%MACRO SYMS ;            /* # OF SYMBOLS = # OF LVLS (ABOVE) */
  SYMBOL1 V=PAW       I=NONE C=BLUE;
  SYMBOL2 V=X         I=NONE C=BLUE;
  SYMBOL3 V=PLUS      I=NONE C=GREEN;
  SYMBOL4 V=SQUARE    I=NONE C=GREEN;
  SYMBOL5 V=TRIANGLE I=NONE C=ORANGE;
  SYMBOL6 V=DIAMOND  I=NONE C=ORANGE;
  SYMBOL7 V=STAR      I=NONE C=BROWN;
  SYMBOL8 V=_         I=NONE C=RED;
  SYMBOL9 V=%         I=NONE C=PURPLE;
%MEND SYMS ;
  TITLE3 END OF PUMPING PERIOD 3;
%PLOT3
```

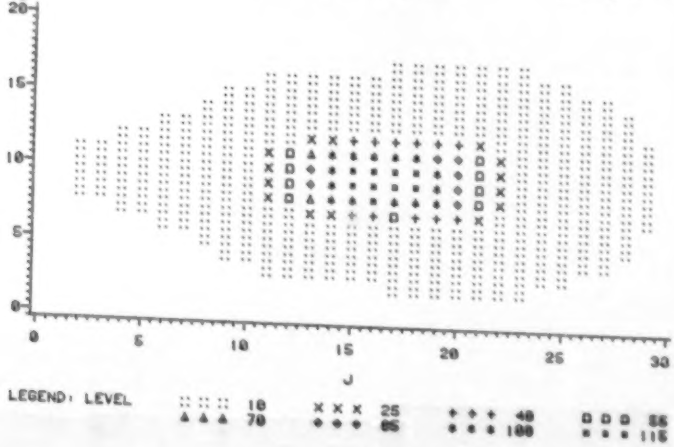
BABYLON LANDFILL SITE
GPLOT CONCENTRATION
END OF PUMPING PERIOD 1

Example 6



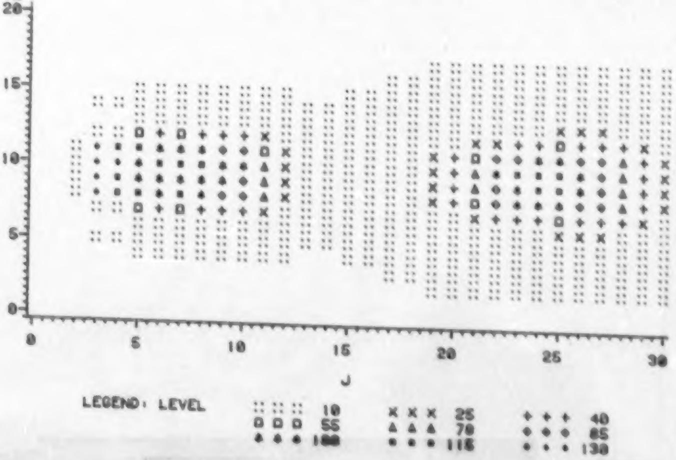
BABYLON LANDFILL SITE
GPLOT CONCENTRATION
END OF PUMPING PERIOD 2

Example 7



BABYLON LANDFILL SITE
GPLOT CONCENTRATION
END OF PUMPING PERIOD 3

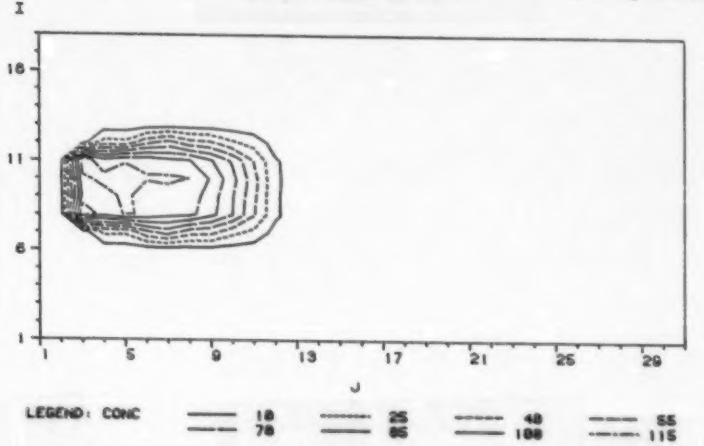
Example 8



```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.MACS.CNTL                              (GCONT    )

GOPTIONS DEVICE=TEK4010;
 %INCLUDE MACROS;
 /*-------------------------------------------- EXAMPLE 9 ---------*/
 /*------------------- GCONT WITH COLOR ---------------------------*/
 /*  CONT2 EXECUTES ALL MACROS NECESSARY FOR A CONTOUR PLOT        */
 /*  WITH COLOR.*/
 %MACRO CONT2;
   %RNGSORT
   %PER
   %PCKVAR
   %CONTCOLR
 %MEND CONT2;
 %LET SETFL=LIB.ALL;     /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME1;     /* CONTAINS DATA TO BE PLOTTED */
 %LET PUMPPER=1     ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=3    ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=3      ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J       ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=CONC     ;    /* VAR TO BE PLOTTED */
 %LET LVLS=8        ;    /* # OF LEVELS TO BE CONTOURED */
 %MACRO CCOLORS;
   'BLUE' 'BLUE' 'GREEN' 'GREEN'
   'ORANGE' 'ORANGE' 'BROWN' 'RED' 'PURPLE'
 %MEND CCOLORS;
  TITLE .H=1 BABYLON LANDFILL SITE;
  TITLE2 GCONTOUR CONCENTRATION;
  TITLE3 END OF PUMPING PERIOD 1;
 %CONT2
 /*-------------------------------------------- EXAMPLE 10 --------*/
 /*------------------- GCONT WITH COLOR ---------------------------*/
 /*  CONT3 EXECUTES ALL MACROS NECESSARY, AFTER THE RANGE HAS BEEN  */
 /*  FOUND, FOR A COLOR CONTOUR PLOT.                               */
 %MACRO CONT3;
   %PER
   %PCKVAR
   %CONTCOLR
 %MEND CONT3;
 %LET SETFL=LIB.ALL;     /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME2;     /* CONTAINS DATA TO BE PLOTTED */
 %LET PUMPPER=2     ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=1    ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=7      ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J       ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=CONC     ;    /* VAR TO BE PLOTTED */
 %LET LVLS=8        ;    /* # OF LEVELS TO BE CONTOURED */
 %MACRO CCOLORS;
   'BLUE' 'BLUE' 'GREEN' 'GREEN'
   'ORANGE' 'ORANGE' 'BROWN' 'RED' 'PURPLE'
 %MEND CCOLORS;
  TITLE3 END OF PUMPING PERIOD 2;
 %CONT3
 /*-------------------------------------------- EXAMPLE 11 --------*/
 /*------------------- GCONT WITH COLOR ---------------------------*/
 /*  CONT3 EXECUTES ALL MACROS NECESSARY, AFTER THE RANGE HAS BEEN  */
 /*  FOUND, FOR A COLOR CONTOUR PLOT.                               */
 %MACRO CONT3;
   %PER
   %PCKVAR
  %CONTCOLR
%MEND CONT3;
%LET SETFL=LIB.ALL;     /* SOURCE FILE OF DATA */
%LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
%LET PROCFL=PLUME3;     /* CONTAINS DATA TO BE PLOTTED */
%LET PUMPPER=3     :    /* PUMP PERIOD TO BE PLOTTED */
%LET TIMESTEP=3    :    /* TIME STEP DATA TO BE PLOTTED */
%LET TIMECT=10     :    /* TIME ELAPSED IN SIMULATION */
%LET VERT=I        :    /* VERTICAL AXIS FOR PLOT */
%LET HORIZ=J       :    /* HORIZONTAL AXIS FOR PLOT */
%LET LVAR=CONC     :    /* VAR TO BE PLOTTED */
%LET LVLS=8        :    /* # OF LEVELS TO BE CONTOURED */
%MACRO CCOLORS;
  'BLUE' 'BLUE' 'GREEN' 'GREEN'
  'ORANGE' 'ORANGE' 'BROWN' 'RED' 'PURPLE'
%MEND CCOLORS;
 TITLE3 END OF PUMPING PERIOD 3;
%CONT3
```

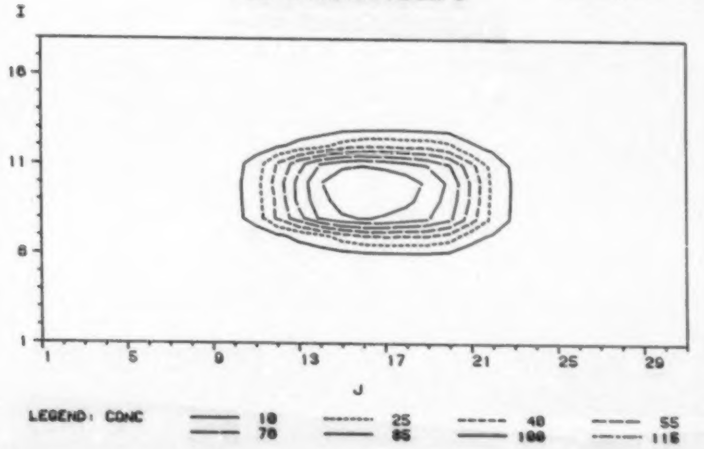
BABYLON LANDFILL SITE
GCONTOUR CONCENTRATION
END OF PUMPING PERIOD 1

Example 9



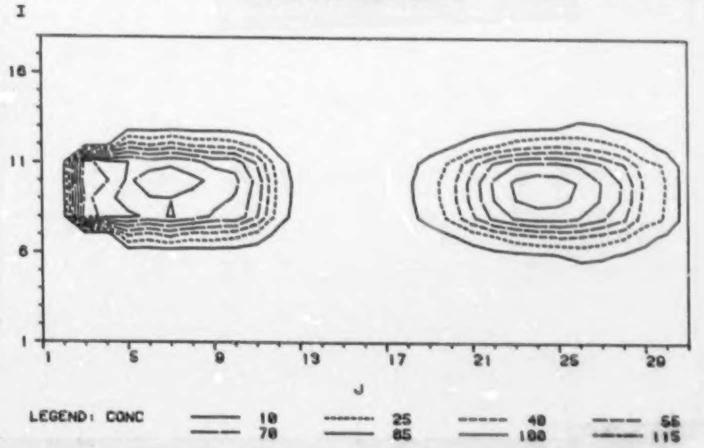
BABYLON LANDFILL SITE
GCONTOUR CONCENTRATION
END OF PUMPING PERIOD 2

Example 10



BABYLON LANDFILL SITE
GCONTOUR CONCENTRATION
END OF PUMPING PERIOD 3

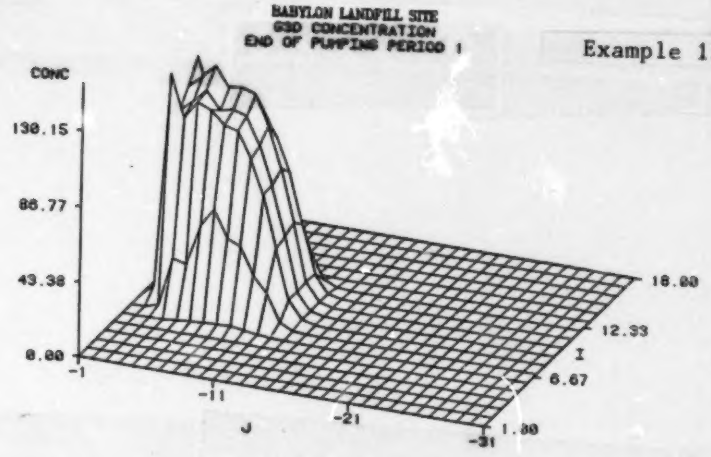
Example 11



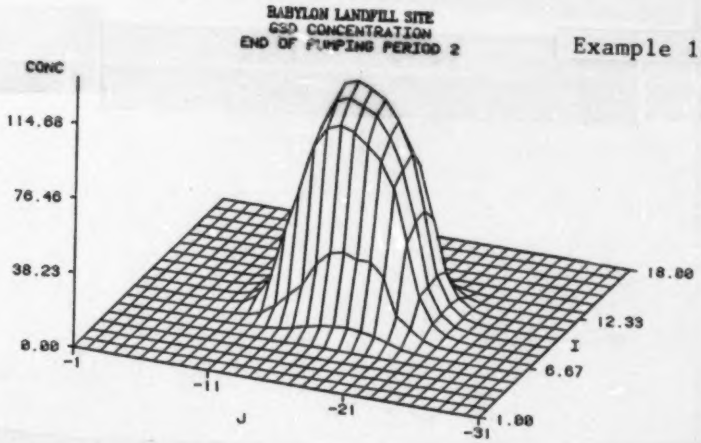
```
**** TSO FOREGROUND HARDCOPY ****
DSNAME=U11236C.MACS.CNTL                              (G3D     )

GOPTIONS DEVICE=TEK4010;
 %INCLUDE MACROS;
 /*---------------------------------------------- EXAMPLE 12 --------*/
 /*------------------- G3D CONTOUR -----------------------------------*/
 /*  G3D1 EXECUTES ALL MACROS NECESSARY FOR A 3 DIMENSIONAL PLOT.    */
 %MACRO G3D1;
   %PER
   %PCKVAR
   %REVAXIS
   %G3DPLT
 %MEND G3D1;
 %LET SETFL=LIB.ALL;     /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME1;     /* CONTAINS DATA TO BE PLOTTED */
 %LET PUMPPER=1     ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=3    ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=3      ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J       ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=CONC     ;    /* VAR TO BE PLOTTED */
 %LET AXIS=J        ;    /* AXIS TO BE REVERSED */
  TITLE .H=1 BABYLON LANDFILL SITE;
  TITLE2 G3D CONCENTRATION;
  TITLE3 END OF PUMPING PERIOD 1;
 %G3D1
 /*---------------------------------------------- EXAMPLE 13 --------*/
 /*------------------- G3D CONTOUR -----------------------------------*/
 /*  G3D1 EXECUTES ALL MACROS NECESSARY FOR A 3 DIMENSIONAL PLOT.    */
 %MACRO G3D1;
   %PER
   %PCKVAR
   %REVAXIS
   %G3DPLT
 %MEND G3D1;
 %LET SETFL=LIB.ALL;     /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME2;     /* CONTAINS DATA TO BE PLOTTED */
 %LET PUMPPER=2     ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=1    ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=7      ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        ;    /* VERTICAL AXIS FOR PLOT */
 %LET HORIZ=J       ;    /* HORIZONTAL AXIS FOR PLOT */
 %LET LVAR=CONC     ;    /* VAR TO BE PLOTTED */
 %LET AXIS=J        ;    /* AXIS TO BE REVERSED */
  TITLE3 END OF PUMPING PERIOD 2;
 %G3D1
 /*---------------------------------------------- EXAMPLE 14 --------*/
 /*------------------- G3D CONTOUR -----------------------------------*/
 /*  G3D1 EXECUTES ALL MACROS NECESSARY FOR A 3 DIMENSIONAL PLOT.    */
 %MACRO G3D1;
   %PER
   %PCKVAR
   %REVAXIS
   %G3DPLT
 %MEND G3D1;
 %LET SETFL=LIB.ALL;     /* SOURCE FILE OF DATA */
 %LET DATAFL=PLUMES;     /* INTERMEDIATE FILE */
 %LET PROCFL=PLUME3;     /* CONTAINS DATA TO BE PLOTTED */
 %LET PUMPPER=3     ;    /* PUMP PERIOD TO BE PLOTTED */
 %LET TIMESTEP=3    ;    /* TIME STEP DATA TO BE PLOTTED */
 %LET TIMECT=10     ;    /* TIME ELAPSED IN SIMULATION */
 %LET VERT=I        ;    /* VERTICAL AXIS FOR PLOT */
```

```
%LET HORIZ=J      ;    /* HORIZONTAL AXIS FOR PLOT */
%LET LVAR=CONC    ;    /* VAR TO BE PLOTTED */
%LET AXIS=J       ;    /* AXIS TO BE REVERSED */
 TITLE3 END OF PUMPING PERIOD 3;
%G3D1
```

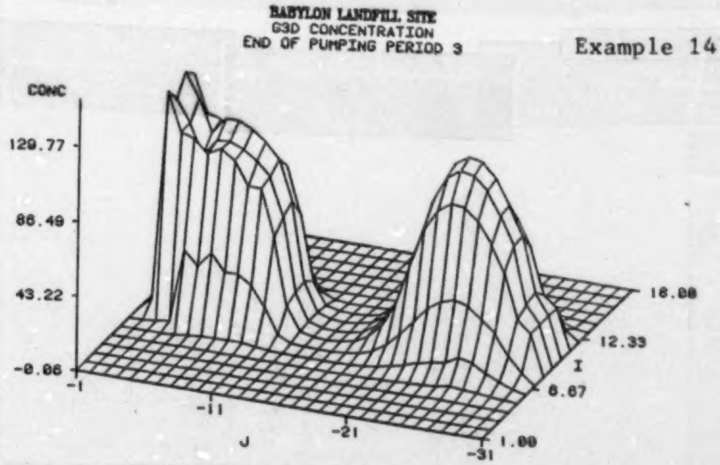
Example 12



Example 13



Example 14



APPENDIX IX

PREPROCESSOR MODIFICATIONS NECESSARY FOR MODEL EXECUTION WITH MS-DOS OPERATING SYSTEM

IX.1 GENERAL DESCRIPTION

A version of the preprocessor has been developed to allow the Modified N.R.C. Version of the U.S.G.S. Solute Transport to be executed on any MS-DOS based microcomputer with 512K random access memory (RAM). The preprocessors are identical except for the development of the JCL, which is described below. The controlling program used to initiate the preprocessor for the microcomputer model simulation is identified as "konim". The modeler enters the initial command

```
konim
```

to begin execution of the controlling program. Subsequently, an introductory screen and opening menu (identical to those described in section 2.1 in the body of the report) are displayed as shown below.

```
          MODIFIED N.R.C. VERSION
 OF THE U.S.G.S. SOLUTE TRANSPORT MODEL,
  VOLUME 2:  INTERACTIVE PREPROCESSOR
                  BY
 D.C. KENT, L. LEMASTER, AND J. WAGNER
                  FOR
  U.S. ENVIRONMENTAL PROTECTION AGENCY


 CHOOSE ACTION:
      1)  CREATE NEW DATA
      2)  MODIFY EXISTING DATA
      3)  END PROGRAM
 (ENTER CORRESPONDING NUMBER):
```

The options are described in the sections 2.2 through 2.4, beginning on page 2-1.

IX.1.1 Preprocessor

The choice of Option 1 on the menu above creates the data sets where the JCL and input parameters are stored in their proper formats. The first prompt asks for the name of the data set to be created. The drive identifier must be included in the name if the drive is other than the logged drive.

```
ENTER THE DATASET NAME TO BE CREATED
(INCLUDE DRIVE IDENTIFIER):  b:longis23.dat
```

The data set name given is "b:longis23.dat" and follows the standard microcomputer conventions. That is, the data set name contains no more than eight characters and begins with an alphabetic character. The data set descriptor (three characters), which is separated from the data set name with a period ".", may be any three alphanumeric character combinations. There is one exception for the data set descriptor, that is the combination "bat" which is the data set descriptor and that identifies the data set that contains the microcomputer JCL.

The drive identifier is requested next.

```
SET UP JCL FOR MODEL
ENTER THE DRIVE IDENTIFIER FOR THE MODEL:  c:
```

If no identifier is entered, the microcomputer assumes that the model will be on the default drive.

The output data set is requested next. The prompt for this is:

```
ENTER THE COMPLETE OUTPUT DATA SET NAME
(INCLUDE DRIVE IDENTIFIER):  b:longis23.lst
```

The output file name is "b:longis23.lst". The file that is to be used with graphics packages such as the Statistical Analysis System (SAS) is now requested.

```
ENTER THE COMPLETE GRAPHICS OUTPUT DATA SET NAME
(INCLUDE DRIVE IDENTIFIER):  b:longis23.grf
```

The graphics file name is "b:longis23.grf".

Following the input of the graphics file name, the JCL is displayed:

```
THE FOLLOWING IS THE JCL
C:KONIMOD B:LONGIS23.LST,B:LONGIS23.DAT,B:LONGIS23.GRF
DO YOU WISH TO CHANGE ANYTHING  (Y/N):  y
```

If the JCL is correct, then "n" is entered. If any error is present, then "y" is entered ("y" and "n" are sufficient to represent "yes" and "no".) In this example, "y" is entered. The model is on disk and will be executed from drive "a:" instead of drive "c:". The following is displayed:

```
C:KONIMOD B:LONGIS23.LST,B:LONGIS23.DAT,B:LONGIS23.GRF
ENTER THE COMPLETE LINE . . .:  a:konimod b:longis23.lst,
b:longis23.dat,b:longis23.grf
```

Note that the correction is entered as one line. The line may wrap around if necessary (as shown above). After the change is entered, The corrected JCL is now displayed.

```
THE FOLLOWING IS THE JCL
A:KONIMOD B:LONGIS23.LST,B:LONGIS23.DAT,B:LONGIS23.GRF
DO YOU WISH TO CHANGE ANYTHING  (Y/N):  n
```

If the JCL is correct, then "n" is entered and the program will proceed to the next prompt described in section 2.2.2, page 2-5.

IX.1.2 Editor

The editor is implemented when option 2 from the menu in IX.1 is chosen. Editing of the JCL is as follows; the data set to be edited is requested first.

```
ENTER THE DATASET NAME TO BE MODIFIED
(INCLUDE DRIVE IDENTIFIER):  longis23.dat
```

The file name entered is "longis23.dat". This file does not exist on the logged drive as indicated in the previous section. Therefore, the correct file name is requested.

```
FILE DOES NOT EXIST--PLEASE REENTER:  b:longis23.dat
```

The file name, with the correct drive identifier, is "b:longis23.dat". The JCL is displayed next to allow editing. Editing is performed as described in IX.1.1, above.

```
THE FOLLOWING IS THE JCL
A:KONIMOD B:LONGIS23.LST,B:LONGIS23.DAT,B:LONGIS23.GRF
DO YOU WISH TO CHANGE ANYTHING  (Y/N):  n
```

No editing of JCL is required in this example. Editing continues with the next prompt as described in section 2.3.2, page 2-27.

IX.2 Microcomputer Model Execution

A model simulation makes an initial access to the data sets used by the model in the following order, 1) output data set, 2) input data set, and 3) graphics data set. The preprocessor produces two data sets for microcomputer model simulation. The data for the model input is stored under the name "longis23.dat" on drive "b", from the above example. A second file is created by the preprocessor to execute the model and to provide data set names in the order described above for the model simulation. The second data set has the same data set name, "b:longis23" for the example above, with the data set descriptor "bat".

A model simulation (execute the model on a microcomputer) is initiated on a two floppy drive system by the following steps. First, place the disks in the appropriate drives. (From the above example, drive "a" for the model disk, drive "b" for the input data disk). Second, execute the "bat" file, which in turn executes the model, by typing the "bat" file name without the descriptor. (For the above example, if the logged drive is "a", type "b:longis23"; if the logged drive is "b", type "longis23"). In the above example, all output data is stored on the disk in drive "b".

The model and data files may be stored on a hard disk and executed from that disk. No provisions have been made to handle path names. If the hard disk drive is the logged drive, drive identifiers are not necessary.

APPENDIX X

PREPROCESSOR MODIFICATIONS NECESSARY FOR MODEL EXECUTION WITH DEC/VAX SYSTEM

X.1 GENERAL DESCRIPTION

A version of the preprocessor has been developed to allow the Modified N.R.C. Version of the U.S.G.S. Solute Transport to be executed on a DEC/VAX minicomputer with a VMS operating system. The preprocessors are identical except for the development of the JCL, which is described below. The controlling program used to initiate the preprocessor for the DEC/VAX model simulation is identified as "konid". The modeler enters the initial command

```
konid
```

to begin execution of the controlling program. Subsequently, an introductory screen and opening menu (identical to those described in section 2.1 in the body of the report) are displayed as shown below.

```
          MODIFIED N.R.C. VERSION
   OF THE U.S.G.S. SOLUTE TRANSPORT MODEL,
    VOLUME 2:  INTERACTIVE PREPROCESSOR
                     BY
   D.C. KENT, L. LEMASTER, AND J. WAGNER
                     FOR
    U.S. ENVIRONMENTAL PROTECTION AGENCY


   CHOOSE ACTION:
        1)  CREATE NEW DATA
        2)  MODIFY EXISTING DATA
        3)  END PROGRAM
   (ENTER CORRESPONDING NUMBER):
```

The options are described in the sections 2.2 through 2.4, beginning on page 2-1.

X.1.1 Preprocessor

The choice of Option 1 on the menu above creates the data sets where the JCL and input parameters are stored in their proper formats. The first prompt asks for the name of the data set to be created. The full file name must be given.

```
          ENTER THE DATASET NAME TO BE CREATED:  longis23.dat
```

The data set name given is "longis23.dat" and follows the standard DEC/VAX conventions. That is, the data set name contains no more than eight characters and begins with an alphabetic character. The data set descriptor (three characters), which is separated from the data set name with a period ".", may be any three alphanumeric character combinations. There is one exception for the data set descriptor, that is the combination "com" which is the data set descriptor and that identifies the data set that contains the DEC/VAX JCL.

The output data set is requested next. The prompt for this is:

```
          ENTER THE COMPLETE OUTPUT DATA SET NAME:  longis23.lst
```

The output file name is "longis23.lst". The file that is to be used with graphics packages such as the Statistical Analysis System (SAS) is now requested.

```
          ENTER THE COMPLETE GRAPHICS OUTPUT DATA SET NAME:  longis23.grf
```

The graphics file name is "longis23.grf".

Following the input of the graphics file name, the JCL is displayed:

```
          THE FOLLOWING IS THE JCL
             1) $ DEFINE FOR005 LONGIS23.DAT
             2) $ DEFINE FOR006 LONGIS23.LST
             3) $ DEFINE FOR010 LONGIS23.GRF
             4) $ RUN KONIMOD.EXE
          DO YOU WISH TO CHANGE ANYTHING  (Y/N):  y
```

If the JCL is correct, then "n" is entered. If any error is present, then "y" is entered ("y" and "n" are sufficient to represent "yes" and "no".) In this example "n" is entered and the program will proceed to the next prompt described in section 2.2.2, page 2-5.

X.1.2 Editor

The editor is implemented when option 2 from the menu in X.1 is chosen. Editing of the JCL is as follows; the data set to be edited is requested first.

```
ENTER THE DATASET NAME TO BE MODIFIED:  longis23.dat
```

The file name entered is "longis23.dat". The JCL is displayed next to allow editing. Editing is performed as described in X.1.1, above.

```
THE FOLLOWING IS THE JCL
   1) $ DEFINE FOR005 LONGIS23.DAT
   2) $ DEFINE FOR006 LONGIS23.LST
   3) $ DEFINE FOR010 LONGIS23.GRF
   4) $ RUN KONIMOD.EXE
DO YOU WISH TO CHANGE ANYTHING  (Y/N):  n
```

No editing of JCL is required in this example. Editing continues with the next prompt as described in section 2.3.2, page 2-27.

X.2 Model Execution on DEC/VAX

The preprocessor produces two data sets for model simulation. The data for the model input is stored under the name "longis23.dat" for the above example. A second file is created by the preprocessor to execute the model and to allocate the data set names given above for the model simulation. The second data set has the same data set name, "longis23" for the example above, with the data set descriptor "com".

A batch model simulation (execution of the model on a DEC/VAX) is initiated by typing the following:

```
SUBMIT LONGIS23.COM
```

The system will allow thirty seconds for model execution. This should be sufficient for hydraulic calibration. If more time is needed, specify a queue that has no time limit with the following command:

```
SUBMIT LONGIS23.COM /SLOW
```

The SLOW queue has a lower priority than the default queue, but the model will not be terminated prematurely.